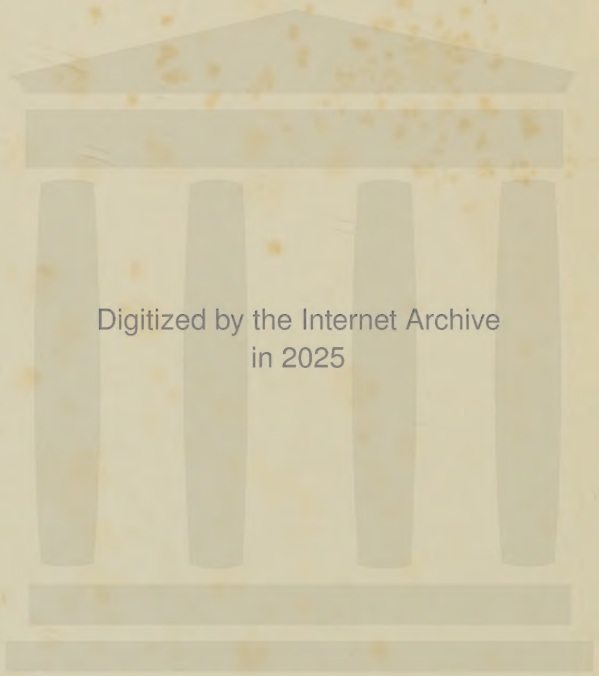
ELEMENTARY REGIONAL GEOGRAPHY

FREDERICK MORT

OLIVER & BOYD'S
EDUCATIONAL SERIES



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ELEMENTARY
REGIONAL GEOGRAPHY

BY

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WITH MAPS AND DIAGRAMS

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PREFACE

An attempt has been made in this book to give a clear idea of the general structure of each country, and to show how far-reaching is the effect of that structure on the climate, the vegetation, the industries, the towns, and the people themselves. If more topographical detail is desired, it can be found in the maps.

The writer ventures to put forward the following suggestions for making the Geography lesson much more a training in observation and reasoning, and much less a mere effort of memory, than is often the case. The pupils should know first of all the approximate limits of the chief wind belts of the world (see p. 7), and should be able from the latitude of a country to say whether it is likely to be hot, or temperate, or cold. Then, *before the text of the book is looked at*, the pupils (as a class lesson) should turn to the orographical map. By studying the map, the main elements of relief and the other physical features may be learned by observation. Some idea of the temperature can be obtained by noting the latitude, and of the rainfall by considering the prevailing winds in conjunction with the mountains. The relief and the climate largely determine the crops that may be expected. The minerals must be learned from the text, but minerals plus crops largely control the distribution of the population. The positions of the chief towns are then found from the map, and speculations may be invited as to the reasons for their growth.

The spelling of the European, Asiatic, and African names has been revised in accordance with the latest recommendations of the Permanent Committee on Geographical names for British official use.

CONTENTS

	PAGE
INTRODUCTION	5
EUROPE—	
General Outline	9
The British Isles	16
England and Wales	24
Scotland	41
Ireland	52
Scandinavia	58
Norway	59
Sweden	61
Finland	62
The Baltic Republics	62
Denmark	63
Holland, or the Netherlands	64
Belgium	66
Luxembourg	68
France	68
The Alps	75
Switzerland	78
Germany	79
Poland	85
Czechoslovakia	86
Austria	87
Hungary	89
Romania	90
Russia in Europe	91
The Iberian Peninsula	95
Spain	98
Portugal	99
Italy	99
The Balkan Peninsula	104
Yugoslavia	105
Albania	107
Bulgaria	108
Turkey in Europe	108
Greece	109
The Mediterranean States of Africa	110
Morocco	111
Algeria	112
Tunisia	112

	PAGE
ASIA—	
General Outline	113
Turkey in Asia	117
Syria and Palestine	118
Mesopotamia (Iraq)	119
Arabia	119
Persia	120
Afghanistan	121
Baluchistan	122
India	123
The Malay Peninsula	129
Siam	130
French Indo-China	130
The Chinese Republic—	
China Proper	131
Manchuria	134
Mongolia	135
Eastern Turkistan	135
Tibet	135
Japan	136
Korea (Chosen)	139
Asiatic Russia	140
The Malay Archipelago	143
AFRICA—	
General Outline	146
Egypt and Anglo-Egyptian Sudan	150
Eastern Africa	153
Central Africa	155
South Africa	156
West Africa	161
The Islands of Africa	164
NORTH AMERICA—	
General Outline	166
British North America	171
The United States	177
Mexico	184
Central America and the West Indies	185
SOUTH AMERICA—	
General Outline	188
The States of South America	191
AUSTRALASIA—	
Australia	196
New Zealand	201
SHORT HISTORICAL NOTES ON NEW EUROPEAN STATES	205

ELEMENTARY
REGIONAL GEOGRAPHY

INTRODUCTION

DISTRIBUTION OF LAND AND WATER

A LITTLE less than **three-quarters** of the whole surface of the earth consists of water, and a little more than a **quarter** consists of land. The largest areas of land are called continents, and the largest areas of water are called oceans. The names and shapes of the different continents and oceans are best learned from the map.

The land is not found regularly distributed over the surface of the earth. The northern hemisphere contains more than **twice as much land** as the southern hemisphere. If you place a globe so that England is uppermost, and look directly down on it, you will see the half of the earth that contains most land (about six-sevenths of all the land of the world), that is, England is the centre of the "land hemisphere."

Some men of science believe that the land and the sea have always occupied much the same positions as they do now: in other words, that the continents and oceans are permanent features of the earth's surface. Most authorities, however, are not of this opinion. A few land areas, such as Scandinavia, the highlands of Brazil, and the Deccan of India, have been permanent since a very early stage in the history of the earth, but where the highest mountains of the world now raise their snowy summits, the deep sea once rolled, and what is now the Atlantic Ocean was once dry land. We come to

this conclusion, not only from the character of the continents themselves, but also from the distribution of animals and plants over the world. For example, Australia is inhabited by a number of strange, pouched animals, which are almost unknown elsewhere. A few species, however, are found in South America, and we conclude that there must have been at one time a **land connection between Australia and South America** to enable the pouched animals to migrate from one continent to another. This land connection was broken by the formation of the South Atlantic Ocean.

CLIMATE: WINDS AND CURRENTS.

The warmest time of the year in this country occurs when the sun is highest in the sky at midday. For example, at London in midsummer the sun at noon is more than four times higher above the horizon than the sun in midwinter. Similarly, we may conclude that places where the sun is generally high above the horizon have a warmer climate than places where the sun never gets so high above the horizon.

In this country the sun is never directly overhead, but on each side of the Equator there is a belt of the earth over 1600 miles wide, where at some time of the year the sun is directly overhead. This whole belt, over 3000 miles in width, is known as the Tropics, and this is the hottest part of the earth's surface. At the poles the sun is always very low in the sky, and these are therefore the coldest parts of the earth. Thus we conclude that on the whole the climates of countries become cooler the farther we go from the Equator, or, in other words, **the greater the latitude, the colder the climate.**

WINDS. In this country the direction and force of the wind vary considerably from day to day, but if careful note of the direction is taken for a long time, it will be found that south-west winds are much more frequent than those from any other direction. In many other parts of the world the winds are much more constant.

Round the Equator there is a belt where calms and light variable breezes are common. This zone is known as the **Doldrums**, or the

belt of Equatorial Calms. About a third of the distance between the Equator and the poles occur other two belts of calms, one north, the other south of the Equator. These are known as the **Calms of Cancer** and the **Calms of Capricorn.** Between the Calms of Cancer and the Doldrums strong and steady north-east winds prevail. These are the **north-east trade-winds.** In the corresponding belt in the southern hemisphere, between the Doldrums and the Calms of Capricorn, the **south-east trade-winds** prevail. North of the Calms of Cancer the winds blow most frequently from the **south-west,** and south of the Calms of Capricorn the commonest winds are those from the **north-west.** The different belts are shown in Fig. 1.

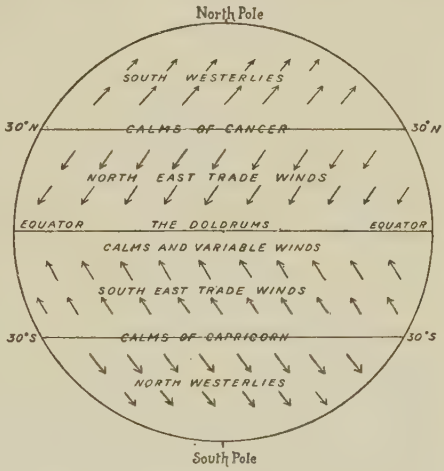

FIG. 1.—Chief Wind Belts of the World.

Winds have an important effect on climate. On-shore winds generally contain moisture, and if they meet with high land, and are thus forced to ascend, they are cooled, and the moisture falls as rain. This is clearly seen in this country, where the prevailing winds are from the west. Cardiff and London are in exactly the same latitude, but Cardiff is on the west coast, while London is on the east coast. The rainfall at Cardiff is over 40 inches a year; the rainfall at London is about 25 inches a year.

CURRENTS. The currents of the ocean are caused mainly by the winds, and have a very important effect on climate. In our latitudes the west sides of continents are washed by currents from the south, while the east sides are washed by

currents from the north. This explains partly the more equable climate of the western shores. It is of great importance to the climate of a country whether the currents are on-shore or off-shore. This is generally determined by the winds. On-shore winds blow the warm surface waters of the ocean against the land, and tend to give it an ample rainfall and equable conditions of temperature. When the winds and currents are off-shore, the cold water from the bottom of the sea wells up round the coast, chilling the neighbouring countries and lessening the rainfall. This is well seen in the very dry regions of the south-west coasts of Africa and South America. The effect on temperature is shown by the fact that while corals flourish along the whole length of the east coast of Africa from the Red Sea to Natal, on the west side they are limited to a comparatively small band on each side of the Equator.

If you remember what has been said about climate, you will find that you can often tell a good deal about the climate of a country simply by looking at the map. When beginning the study of a country you should always see how much you can discover about its climate simply by examining the map. First notice what the latitude is, for this will tell you if the country is likely to be hot or cold. Remember also that countries in the tropics have not four well-marked seasons as we have. The temperature does not vary much, and the year is generally divided into dry seasons and wet seasons. Then find out if the country is near the sea or far inland, for "maritime" countries have not such extremes of temperature as "continental" countries. Next think what the prevailing winds are likely to be, for they have a strong influence on the rainfall. In the same way, when you know what the climate is, you can tell what crops are likely to be grown without ever looking at a book.

NOTE TO COLOURING
12000 Feet
6000
3000
1500
600
SEA LEVEL
100 Fathoms
1000
ARCTIC
Jan Mayen
Iceland
Arctic Circle
Faroe Is.
Shetland Is.
Orkney Is.
Hebrides
BRITISH ISLES
NORTH SEA
ATLANTIC OCEAN
Irish Sea
English Channel
Bay of Biscay
Pyrenees
SPANISH PLATEAU
C. St Vincent
Balearic Isles
Corsica
Sardinia
Tyrrhenian Sea
Adriatic Sea
APENNINES
ALPS
MEDITERRANEAN
Algerian Plateau
Atlas Mts
Malta
Sicily
Longitude

EUROPE
OROGRAPHICAL
English Miles
0 100 200 300 400 500 600
ARCTIC OCEAN
North Cape
Tanenger Fiord
Kolguev I.
Enzor Str.
C. Kanin
Tundras
Ural Mountains
R. Ob
ASIA
Kola Peninsula
White Sea
R. Mezen
Archangel
R. Pechora
R. N. Dwina
R. Onega
R. Mezenga
L. Onega
L. Ladoga
Gulf of Bothnia
Helsingfors
Finland
R. Volga
L. Peipus
L. Ilmen
Valdai Hills
Nizh Novgorod
R. Oka
R. Kama
R. Vyatka
R. Ural
Moscow
Marshes of the Pripet
Steppes
R. Dniepr
R. Don
Caspian Depression Below Ocean level
Aral Sea
R. Volga
Astrachan
CASPIAN SEA
85 fathoms
100 fathoms
Sea of Azov
R. Kuban
Caucasus Mts
Walachian Plain
R. Danube
BLACK SEA
100 fathoms
1000 fathoms
Balkan Mts
Bosphorus
Constantinople
ASIA MINOR
Candia
Rhodes
Cyprus
Greenwich

EUROPE

STRUCTURE, CLIMATE, AND VEGETATION ZONES

INTRODUCTION. In learning Geography, constant and careful use must be made of maps. In every instance the first thing to be done is to **look at the scale** of the map, in order to have some idea of the sizes of the countries or seas represented. It must be remembered that if the area shown is large, the scale of miles will probably not apply equally well to all parts of the map. In this case, therefore, if we wish to measure distances exactly, we must make our measurements on a globe. In estimating the relative size of any country from a map, it is very useful to remember that **one degree of latitude is equal roughly to sixty-nine miles.** Of course, since the lines of **longitude** converge to the poles, it is only at the Equator that one degree of longitude equals sixty-nine miles.

If the map is coloured or shaded in any way, the next thing to do is to **note carefully what each tint of colour or each kind of shading means.** For many purposes, the most valuable kind of map is one that shows the height of the land above sea-level, and the depth of the sea, either by colouring or by shading. Such maps are called bathy-orographical, or simply **orographical** maps, from the Greek words *oros*—a mountain, and *grapho*—I write. Look at the orographical map of Europe (see Frontispiece). Notice carefully the scale of colouring, and then answer the following questions. What do you know about the height above sea-level of most of Russia? What part of France is highest? Is the North Sea or the Black Sea deeper? Where is the largest continuous area more than 6000 feet above sea-level?

RELIEF. We must next try to obtain a clear idea of the **relief** of Europe. By relief we mean the mountain-ranges, plateaus, plains, and valleys, and their relation to each other. Before we can under-

stand the relief of any country, however, we must distinguish carefully between different **types of mountains.** If you push a tablecloth with your fingers, you will find that it wrinkles up into parallel folds. The hard, solid crust of the earth has been wrinkled up in a similar manner by gigantic thrusts, acting very slowly and gradually, which have produced folds of rock thousands of feet high, and which can sometimes be traced for thousands of miles. Mountains formed in this way run in long, parallel ranges, divided by long, parallel valleys. From their mode of formation they are called **folded mountains.** There are no folded mountains in Britain, but the Alps or the Himalaya are good examples.

Many mountainous areas do not show any true *ranges* at all. If we were to stand on a mountain-top in such an area and look around, we should see no parallel mountain-ranges, but a rough and tumbled sea of peaks, without any apparent order or arrangement. The mountains of such an area have been carved by the rain, the frost, and the rivers, out of a plateau, and if the material worn out of the valleys were replaced, such an area would again be a tableland. A mountainous area of such a nature is known as a **dissected plateau.** Good examples are the central plateau of Spain and the Highlands of Scotland.

FOLDED RANGES. The folded ranges of Europe begin in the west with the **Pyrenees,** a range that is broken off by the Gulf of Lions. The system is then seen in the **Alps** proper, between France and Italy. The massive blocks of the Vosges and the Black Forest force the folded mountain-chain to bend to the east, where the system divides into two branches, one branch going south-east and forming the **Dinaric Alps,** the other running east till it is broken through by the Danube. The line reappears again as the **Carpathian Mountains,** which are forced by the rigidity of the Russian Platform to curve round into the **Transylvanian Alps.** The Danube bursts through the line at the gorge of the Iron Gates, and then the ranges run eastward again as the **Balkan Mountains,** till they are broken off short by the Black Sea. The system can be traced again in the Crimea, whence it crosses to the Caspian Sea as the **Caucasus**

Mountains. It reappears to the east of the Caspian running across Asia, and we shall trace its course in Asia later on.

Let us go back to the branch that formed the Dinaric Alps. This branch runs south into Greece, where it is known as the **Pindus Mountains.** The peculiar appearance of the south coast of Greece is due to the parallel ranges running out to sea. The islands of **Crete** and **Cyprus** are probably parts of the summits of the ranges, the rest of which have sunk below sea-level. There is still one more branch of the system to be considered. The **Maritime Alps** run east from the French-Italian frontier into the **Apennines.** The line goes south to the "toe" of Italy, reappears in Sicily, and can be traced again in the north of Africa as the **Atlas Mountains.** Thus, in their structure, and as we shall see later, in almost every other respect, Morocco, Algeria, and Tunisia are **more akin to Europe** than to the other parts of Africa. The Atlas Mountains are broken across by the Strait of Gibraltar, but reappear as the **Sierra Nevada** of southern Spain. The system is once more broken off by the Mediterranean Sea, but we probably see traces of it in the **Balearic Islands.** These mountains should be traced carefully on the map between pp. 8 and 9.

DISSECTED PLATEAUS. In the north-west is the ancient plateau of **Scandinavia,** broken on the west by countless fiords. The **Highlands of Scotland and North Ireland** show the same features, and were probably at one time continuous with the Scandinavian Plateau. The plateau type of highlands is seen also in **Wales** and **Cornwall.** Most of Spain is a very rugged and much dissected plateau, known as the **Meseta.** North of the Pyrenees appears the **Central Plateau of France,** the **Vosges,** and the **Black Forest. Bohemia** and its mountain borders form a rigid tableland that forced the Alps to take a southward bend at this point.

THE EUROPEAN PLAIN. Look at the Frontispiece, and you will see a great stretch of low ground, beginning in the east of England and forming Holland and North Germany, then extending into Russia, where it broadens out and occupies most of this country. These lowlands are known as the **European Plain.**

FOUNDERED BASINS OF SOUTHERN EUROPE. Sometimes the solid crust of the earth becomes cracked, and great blocks of it, perhaps hundreds of square miles in area, gradually settle down lower and lower. Often they sink far below sea-level, and thus form deep basins.

The **Western Mediterranean Basin** has carried down below sea-level the folded chains that once joined the Sierra Nevada to the Alps, until only their tops are seen as the Balearic Islands. Very frequently it is found that **volcanic eruptions** and **earthquakes** occur in the regions bordering these basins. This can be well seen in the surroundings of the **Tyrrhenian Sea**, a foundered basin between Italy and Sardinia. The extinct animals of Sardinia and Corsica show that these islands were once joined to Italy. The foundered **Eastern Mediterranean Basin** is also accompanied by active volcanoes round its border. The **Black Sea** and the **Caspian Sea** are also foundered basins, and another one is seen in the Adriatic. Notice the great depth of the Black Sea and the Caspian Sea compared with the North Sea, and parts even of the Atlantic Ocean. The **Plain of Hungary** is a foundered basin that has not sunk below sea-level.

CLIMATE. 1. General. With the exception of a comparatively small area in the north, Europe lies entirely **in the north temperate zone.** Europe is also very fortunate in forming the western part of the great land-mass known as Eurasia; for the climate of the western shores of a continent is generally much more equable than the climate of the eastern shores.

2. Temperature. Since Europe extends for nearly two and a half thousand miles from north to south, it is plain that the northern shores will be very much colder than the countries round the Mediterranean. In addition to the usual change as we go north or south, there is a **change** in temperature as we go **from west to east.** The countries in the west and south have a **maritime** climate (that is, a climate strongly influenced by the sea), while countries farther inland have a **continental** climate. The sea is not nearly so warm in summer nor so cold in winter as the land. It has been calculated that the average range of temperature of the land between summer

and winter is more than **twelve** times the range of the temperature of the sea. Thus the western countries of Europe have not so **extreme** a climate as the eastern countries. In the east of Russia, for example, there are four months of hard frost in winter time, and two months of intense heat in summer time.

3. Rainfall. The rainfall of a country increases as we go higher above sea-level. Thus the **mountainous** parts of Europe are the **rainiest.** This is because the mountains force the wind to rise, in order to cross them. The upper parts of the air are much colder than the layers near the surface of the earth, and cold air cannot contain so much moisture as warm air; therefore the moisture condenses and falls as rain.

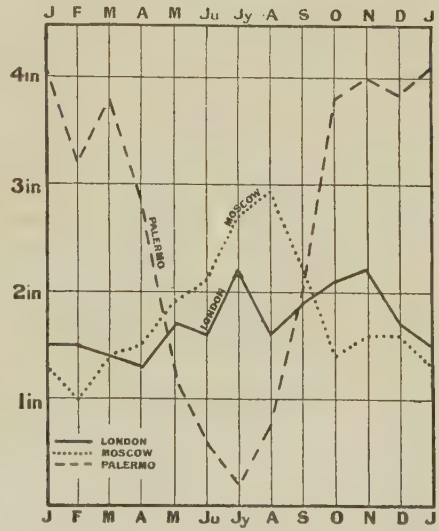

FIG. 2.—Rainfall Curves, showing three types of Rainfall: (*a*) West European; (*b*) Continental; (*c*) Mediterranean.

The rain does not everywhere fall uniformly throughout the year. We can separate Europe into three divisions.

(1) **Western Europe**:—Rainfall fairly uniform throughout the year.

(2) **The Mediterranean Region**:—Rainfall heavy in winter, very scanty in summer.

(3) **The Eastern Interior**:—Rainfall heavier in summer than in winter.

The three curves in Fig. 2 show how the rainfall increases and decreases throughout the year at typical places in Europe.

4. Winds. The prevailing winds of Europe come from the **south-west**, and they have an important influence on the climate. They come from a warm ocean, and therefore in winter they bring warmth and moisture with them. Notice that the mountains of Europe run generally in an east and west direction, so that the winds can penetrate into the interior. The south-west winds, in addition, cause a general drift towards the shores of western Europe of the warm surface-waters of the Atlantic Ocean, and thus in winter a great V-shaped area, with comparatively warm weather, extends far up the western shores of Europe. This is very **important for trade**, for it prevents the harbours of western Europe from freezing in the same way as the harbours of eastern Europe or of Canada do. The **Gulf Stream** has practically **no effect** on the climate of Europe. The real benefactor is the south-west wind that produces the warm **Atlantic Drift.**

VEGETATION. The vegetation of Europe varies according to the climate. In the extreme north are the **Tundras.** Here there are no trees, for the surface is frozen except for a month or two in summer, when the land is often converted into a marsh. A few stunted bushes may be seen, but moss and lichens form the main growth. As we pass farther south we come into the region of **coniferous forests.** The trees are cone-bearing pines and firs, with occasional birches. Lumbering is the chief occupation in these regions. The trees are cut down and dragged in winter-time to the frozen rivers. When the thaw comes the timber is floated down stream to the sawmills. Dense coniferous forests extend across Scandinavia and northern Russia. They are found also high up the slopes of the mountains of Central and Southern Europe, where the air is too cold to support other trees. The coniferous forests gradually pass into the **deciduous forests** that are found over most of Central Europe. Deciduous trees shed their leaves every autumn. Nearly all our common trees, such as the birch, the beech, the oak, the ash, the elm, etc., are deciduous. Although these forests at one time stretched almost continuously over Central Europe, they have been largely cut down to make room for the grain and other crops that now take their place.

In places where the rainfall is scanty, we do not find forests, but wide expanses of grass-land. These dry areas are known as **steppes**, and in many parts of them ordinary crops cannot be cultivated without irrigation. Thus the rearing of live stock is usually the most important occupation of the steppes. Broad tracts of land of this nature are found in south-eastern Europe, stretching from Russia far into Asia. The people inhabiting these regions are generally wandering tribes, who drive their flocks and herds before them from one pasture to another. Where the rainfall is adequate, the steppe-land of Russia makes a splendid wheat-growing country.

The **Mediterranean Region** shows marked differences in vegetation from the other parts of Europe. **Evergreen trees** are conspicuous, with thick, glossy leaves fitted to stand the dry summers. The **olive** and the **vine** are the most valuable plants. The cork-oak, the mulberry tree, and fruits of different kinds are also important.

Finally, it must not be forgotten that if we ascend a mountain in any part of Europe, the general effect on vegetation is similar to what we would experience if we went north. The ascent of an Alpine peak would lead us from deciduous forests, through a belt of pine forest to grassy and mossy slopes, and finally to a region of everlasting snow.

ANIMALS. The larger wild animals are now almost extinct in Europe. They still linger on in the more unfrequented parts of the Continent, or where they are preserved for "sport." In Russia and the East wolves are still found, and the brown bear has not yet quite disappeared. The chamois can be seen in the mountains, and in the forests of Central Europe the wild boar is still hunted. Domesticated animals are found all over Europe. They are kept chiefly for drawing or carrying loads, as the horse, the ass, and the mule; for milk, as the cow and the reindeer; for food, as the sheep, the ox, the pig, and various birds; and for providing the raw material of manufacturing industries.

THE BRITISH ISLES.

SITUATION. The British Isles are exceptionally well situated in many ways. They lie **close to the mainland** of Europe, and therefore are able to share in the trade that is continually going on between all the important European nations. Britain lies also on the **margin of the Atlantic Ocean,** which is now the great highway of commerce between Europe and America. It is surrounded by the sea, and therefore **does not need to guard its borders** in the same way as countries on the mainland. Therefore only a comparatively small standing army is required, leaving more men free for industrial pursuits.

BRITISH SEAS. Turn to the map of Europe (see Frontispiece). Notice that the seas round Britain are comparatively shallow. The

FIG. 3.—Section across the Continental Shelf, west of Ireland. Vertical scale exaggerated 10 times. (After Mackinder.)

line showing a depth of 100 fathoms (600 feet) runs round to the west of the British Isles, so that if the sea-level sank 600 feet, Britain would be joined to the Continent. There are several reasons for feeling pretty sure that **England was once joined to the Continent.** The animals of England and the Continent are almost the same, although England has fewer kinds than the Continent, and Ireland still fewer. Again, the chalk cliffs of France have every appearance of having been once continuous with the chalk cliffs of England.

Just to the west of the 100-fathom line the bottom of the ocean slopes down much more steeply, so that its shape in section is similar to that shown in Fig. 3. The extension of Europe to the west under a shallow sea is known as a "continental shelf," because the continent slopes at first gently under the sea, before plunging down more steeply into the depths of the ocean. The British Isles, therefore, **rise from a continental shelf.**

BRITISH ISLES
BATHY-OROGRAPHICAL
English Miles
0 20 40 60 80 100
Shetland Islands
Mainland
Unst
Foula
Sumburgh Hd
Orkney Islands
Pomona or Mainland
Hoy
Sanda
Pentland Firth
Duncansby Hd
Cape Wrath
Flannan Is
Outer Hebrides
North Uist
South Uist
Barra
Skye
Inner Hebrides
Mull
Jura
Islay
Rockall
Rockall Depression
Minch
North West Highlands
Ord of Caithness
Dornoch Firth
Moray Firth
Highlands
Ben Nevis
Grampians
Cairngorm
Lammermuir Hills
Firth of Tay
Firth of Forth
Central Lowlands
Southern Uplands
Main Hd
Mull of Galloway
Bloody Foreland
Man Bank
Berwick Bank
The Wash
NORTH SEA
ATLANTIC OCEAN
Norwegian Depression
100 fathoms
1000 fathoms

NOTE TO COLOURING
3000 Feet
1500
600
SEA LEVEL
50 Fathoms
100
500
1000
ATLANTIC
IRISH SEA
ENGLISH CHANNEL
Central Plain
Western Plain
Eastern Plain
Midland Plain
Welsh Mountains
Salisbury Plain
Plain of France
Bristol Channel
St George's Channel
Cardigan Bay
Bude Bay
Lyme Bay
Channel Islands
Isle of Man
Isle of Wight
Longitude West & of Greenwich
Secant Conic Projection
John Bartholomew & Son, Ltd. Edin

The shallowness of the seas round the British Isles is very important in two ways. When the tide comes in, it only rises to a considerable height if the sea adjoining the land is shallow. It is therefore the shallowness of the seas round our coasts that gives us the high tides that are so useful in flooding the harbours and bringing the ships safely to port in deep water. Again, fish congregate and feed only in shallow water and round submarine banks. The banks of the North Sea are among the most valuable fishing-grounds in the world, and a great many people in Britain obtain a livelihood by fishing.

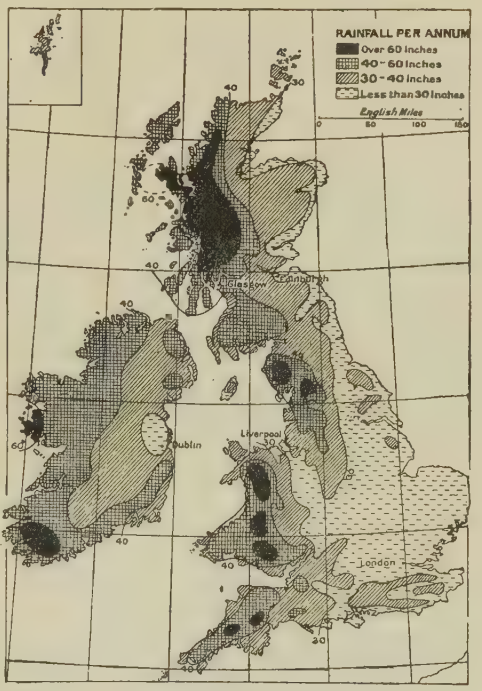

FIG. 4.—Average Annual Rainfall of the British Isles. (After Mill.)

Turn now to the map of the British Isles between pp. 16 and 17, and become familiar with the chief seas and straits round them. These are, the North Sea, the Irish Sea, the Strait of Dover, the English Channel, St George's Channel, and the North Channel. Notice how well the Irish Sea is situated for trade between the four countries, and how conveniently the North Channel and St George's Channel lead from it to the open ocean.

RELIEF. The highlands of the British Isles may be grouped in three great masses and a number of smaller ones. Farthest north are the **Highlands of Scotland.** High ground occurs again in the south of Scotland, and this hilly tract extends without a break over the border into England, and stretches south to the Midlands of England. This group is known generally as the **Central Uplands.** The **Welsh Mountains** form the third main mass. Other smaller areas occur in Devon and Cornwall, and in Ireland, but these will be studied later.

Notice that the highlands are situated to the north and west. Will this have any effect on the lengths of the rivers of the east and the west? Which rivers would you expect to be best for navigation?

CLIMATE. 1. Rainfall. Look at the map on p. 17, which shows the average annual rainfall of the British Isles, and make yourself quite familiar with the meaning of the shading. Notice that the rainfall is heaviest in the West Highlands of Scotland, in the Lake District, and in Wales. Now compare the rainfall map with the orographical map of the British Isles, and you will see that the **higher above sea-level** you go, the **greater** does the **rainfall** become. Fig. 4 also shows that the **east coast is drier than the west.**

2. Winds. The rainy character of the west of Britain is due not only to the fact that the highest ground occurs in the west, but is caused also by the prevailing south-west or west winds of this country, which come charged with moisture from the Atlantic.

3. Temperature. The maps on p. 19 show the mean temperature of the British Isles in January and in July. The lines are drawn through places having the same average temperature for these months, and thus show which are the warmest and which the coldest parts of Britain in January and July. Because the lines join places having the same mean temperature, they are called **isotherms.** Look up the derivation of this word. Now determine the answers to the following questions:—

What part of Britain is coldest in winter?

What part of Britain is warmest in summer?

What part of Britain has the most extreme climate?

If we pass from London to Land's End in summer, does the temperature rise or fall? Does the same thing hold in winter?

VEGETATION. The vegetation of this country depends very largely on the climate. The highlands are much colder, much more rainy, and much more exposed to wind than the lowlands, and, therefore, neither trees nor crops can be grown on ground that is

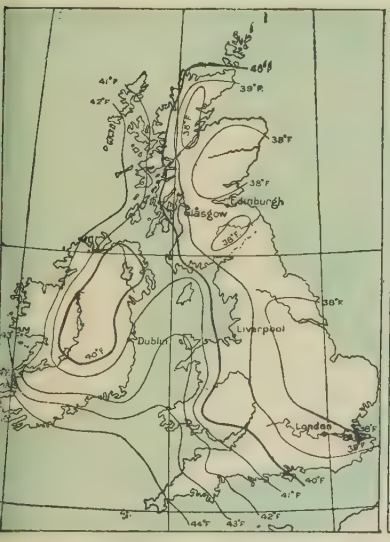

FIG. 5.—Isotherms for January.

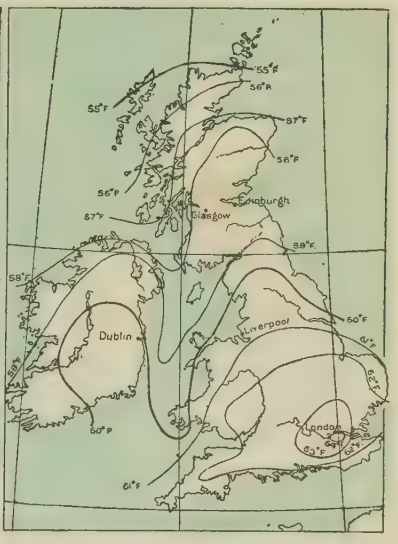

FIG. 6.—Isotherms for July.

far above sea-level. Look at the map on p. 20, which shows the distribution of the cultivated and the uncultivated land in Britain. Compare it with the orographical map. Notice that it is the higher parts that are uncultivated. Besides the mountainous parts, there are tracts of boggy or sandy ground that are not cultivated. The mountain slopes are used for pasturing sheep.

The chief grain crops grown in this country are **oats, wheat, and**

barley. Wheat needs a hot, dry summer to ripen properly. Look at the temperature and rainfall maps, and find in what parts of this country you would expect most wheat to grow. The **east of England grows more wheat** than any other part of this country. **Oats** are much hardier than wheat, and are, therefore, grown much more widely. In the west of Scotland particularly, with its cold, wet summers, oats are by far the commonest grain. **Barley** can be grown from the Tropics to the Arctic circle. In this country barley is not grown so much for food as for the making of beer and whisky. The most important of the other crops are **turnips** and **potatoes**, the former being grown largely in Scotland and the latter in Ireland. Fig. 8 shows the average comparative areas devoted to the chief crops from 1920 to 1925.

FIG. 7.—Distribution of Cultivated and Uncultivated Land in Britain.

Britain does not grow nearly enough wheat to feed its inhabitants, so that large supplies of wheat and flour have to be imported from other countries. The following table gives the value of principal food stuffs imported into the United Kingdom in 1925. You should not try to remember the figures, but it is very important

to know to what extent we are dependent on other countries for our food.

Principal Food Stuffs, with their Values, Imported in 1925.

Grain and Flour	£105,000,000
Beef, Chilled and Frozen	30,670,000
Mutton and Lamb, Frozen, Tinned, etc.	22,070,000
Bacon and Hams, Pork, etc.	50,775,000
Animals, Living, for Food	17,575,000
Butter, Cheese, Eggs	85,490,000
Margarine	4,880,000
Fish	10,770,000
Fruit (Apples, Bananas, Oranges)	21,500,000
Vegetables (Potatoes, Onions, Tomatoes)	11,290,000

CATTLE AND SHEEP. **Sheep** are reared mainly in the hilly districts of Britain, where ordinary crops will not ripen, but grass-land is available for pasture. Thus the **Downs** of Kent, the **Cotteswolds** and the **Chilterns**, **Wales** and the **Cheviots**, are the most important sheep-rearing districts. Fairly rich pasture-land is needed for **cattle**, so that we find that cattle are most numerous in the lowlands, particularly the rainy, western lowlands. Cattle are most important in **Ireland**, and in the counties of **Cheshire**, **Somerset**, **Pembroke**, **Ayr**, **Renfrew**, and **Wigtown**.

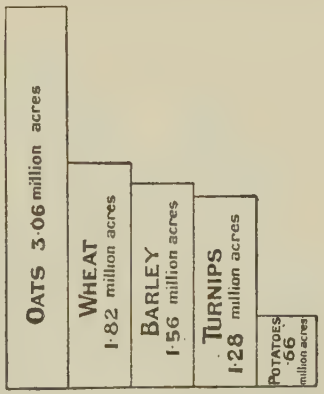
OATS 3·06 million acres
WHEAT 1·82 million acres
BARLEY 1·56 million acres
TURNIPS 1·28 million acres
POTATOES ·66 million acres

FIG. 8.—Chief Crops of Great Britain. Average areas under Oats, Wheat, Barley, Turnips, and Potatoes.

MINERALS. By far the most important mineral in this country is **coal**. In order to drive machinery we must have power, usually

from steam, gas, or electricity ; and to obtain this, coal is necessary. The prosperity of Britain as a manufacturing country, therefore,

FIG. 9.—Chief Coal-fields of Britain.

depends in the first instance on coal. The principal coal-fields are shown in Fig. 9, and they should be known thoroughly.

Their names are as follows :—

SCOTLAND: (1) Fifeshire, (2) Midland (Lanark and Lothians), (3) Ayrshire.

ENGLAND: (4) Northumberland and Durham, (5) Cumberland, (6) Yorks, Derby and Notts, (7) Lancashire, (8) Midlands, (9) North Wales, (10) South Wales.

Of these, the most important are the Northumberland and Durham, the Yorks, Derby and Notts, and the South Wales coal-fields. In Ireland there are a few small coal-fields, but they are unimportant.

After coal our most important mineral is **iron**. In many instances iron-ore is obtained from the same districts as coal. The most important centres for iron-ore are the **Cleveland** district of Yorkshire, the **Furness** district of Lancashire, **Cumberland, Lincolnshire, Northamptonshire, Staffordshire, Ayrshire,** and **Lanarkshire.** Valuable deposits of iron-ore are found at intervals all **along the limestone ridge** described on p. 25, the south part of which is known as the Cotteswold Hills, and the north part as the Cleveland Hills. (See Fig. 9.) Large quantities of iron-ore are now imported into this country, chiefly from **Spain.** The amount of pig-iron produced from foreign ores is now almost equal to that produced from ores raised at home.

After iron, **tin** is the most important metal found in this country. **Devon** and **Cornwall** are the only places where it is worked. We import large quantities of tin from the **Malay Peninsula. Lead** is widely distributed, and is found in **Wales, Cumberland,** the **Pennine Uplands,** and the **Lowther Hills** in Scotland. Most of our supplies of lead, zinc, and copper are now obtained from abroad. **Slates** are found in **Wales,** the **Lake District,** and the **Highlands of Scotland.** The materials used for building depend to a large extent on the supplies of stone in the locality. London is fairly near good limestone quarries, so that many of the most important buildings are of limestone. The towns in the Midlands find it more convenient to construct brick buildings, because clay is at hand in abundance, while building-stone is not. Glasgow is surrounded by fine sandstone quarries, and therefore it is built almost entirely of sandstone; while Aberdeen contains many granite buildings, because it is situated in a granite district. The best flagstones for paving are obtained from Arbroath and Caithness.

ENGLAND & WALES
OROGRAPHICAL
English Miles
0 20 40 60 80 100
NOTE TO COLOURING
2000 Feet
1000
500
SEA LEVEL
SCOTLAND
GLASGOW
EDINBURGH
Berwick on Tweed
NORTHUMBERLAND
Newcastle
South Shields
SUNDERLAND
Durham
DURHAM
Hartlepool
CUMBERLAND
WESTMORLAND
Stockton
Middlesbrough
Whitby
NORTH RIDING
Scarborough
YORK
EAST RIDING
Flamborough Head
Bridlington
HULL
LANCASHIRE
LEEDS
BRADFORD
Halifax
Wakefield
Rochdale
Bury
Manchester
Wigan
Bolton
Salford
LIVERPOOL
SHEFFIELD
Barnsley
Doncaster
Grimsby
Lincoln
LINCOLN
CHESHIRE
Chester
Mold
FLINT
DERBY
NOTTINGHAM
Newark
DENBIGH
CARNARVON
Carnarvon Bay
ANGLESEY
Holyhead
Holy I.
Skerries
Carmels Pt.
Penmaen Mawr
Llandudno
Conway
Bangor
Menai Strait
Snowdon
Penmaen Bay
Barmouth
Aberystwith
Cardigan Bay
Cardigan
Pembroke
Milford Haven
St Davids Head
Fishguard
Tenby
Swansea
Swansea Bay
Neath
Port Talbot
Cardiff
Penarth
Newport
Chepstow
Monmouth
Abergavenny
Brecon
Merthyr Tydvil
Llandaff
Bridgend
Glamorgan
Aberdare
Pontypridd
Caerphilly
Usk
Ross
Hereford
Leominster
Ludlow
Shrewsbury
Oswestry
Wrexham
Ruthin
Llangollen
Denbigh
Llanrwst
Bala
Dolgelly
Machynlleth
Aberystwith
Welshpool
Montgomery
Newtown
Llandrindod
Builth
Rhayader
Presteigne
Knighton
Radnor
Kington
Hay

ST GEORGE'S CHANNEL
BRISTOL CHANNEL
ENGLISH CHANNEL
STRAIT OF DOVER
FRANCE
BAY
MONTGOMERY
SHROPSHIRE
LEICESTER
NORFOLK
RADNOR
CARDIGAN
HEREFORD
WORCESTER
WARWICK
NORTHAMPTON
HUNTINGDON
CAMBRIDGE
SUFFOLK
PEMBROKE
CARMARTHEN
BRECKNOCK
BEDFORD
CARMARTHEN Bay
GLOUCESTER
OXFORD
BUCKINGHAM
HERTFORD
ESSEX
MONMOUTH
GLAMORGAN
BERKSHIRE
MIDDLESEX
LONDON
WILTSHIRE
SURREY
KENT
SOMERSET
HAMPSHIRE
SUSSEX
DEVON
DORSET
CORNWALL
Bristol
Cardiff
Bath
Reading
Windsor
Oxford
Aylesbury
Chelmsford
Colchester
Ipswich
Norwich
Great Yarmouth
Lowestoft
Harwich
Maidstone
Canterbury
Ramsgate
Margate
Deal
Dover
Folkestone
Hastings
Eastbourne
Brighton
Chichester
Portsmouth
Southampton
Winchester
Salisbury
Salisbury Plain
Taunton
Exeter
Plymouth
Torquay
Dartmouth
Exmouth
Weymouth
Dorchester
Portland I.
Bill of Portland
Lyme Bay
Tor Bay
Start Pt
Lizard Head
Land's End
Falmouth
Truro
Penzance
St Ives
Bude Bay
Barnstaple Bay
Ilfracombe
Lundy I
Milford Haven
St Davids
Fishguard
Aberystwith
Cardigan
New Radnor
Presteigne
Brecon
Builth
Llandrindod Wells
Hereford
Worcester
Malvern Hills
Stratford on Avon
Northampton
Bedford
Cambridge
Huntingdon
Peterborough
Leicester
Oakham
Melton Mowbray
Grantham
Lincoln
Boston
Wisbech
Ely
Newmarket
Bury St Edmunds
Ipswich
Colchester
Harwich
The Naze
Foreland
Blackwater R.
Crouch R.
Thames
Mouth of the Thames
Medway R.
Sheerness
Isle of Sheppey
Isle of Thanet
North Foreland
Dungeness
Beachy Head
Selsea Bill
St Catherine's Head
Needles
Isle of Wight
Cowes
Ryde
Spithead
Calais
Boulogne
Dieppe
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the south-east to the north-west of England and to Ireland, and since the beginning of history has been one of the most important routes in Britain. The **Welsh Highlands** form a good example of a **dissected plateau.** The mountainous area is a roughly rectangular block of high ground carved by rivers, rain, and frost, into a picturesque area of mountains and valleys. The most important peaks in this area are, **Snowdon** (3560 feet), **Cader Idris** and **Brecknock Beacon** (just under 3000 feet), and **Plynlimmon** (nearly 2500 feet). The main valleys of the Welsh Highlands open to the east towards England.

Leaving the Welsh Highlands, we find that in the south-west peninsula of England there are several high masses, the most

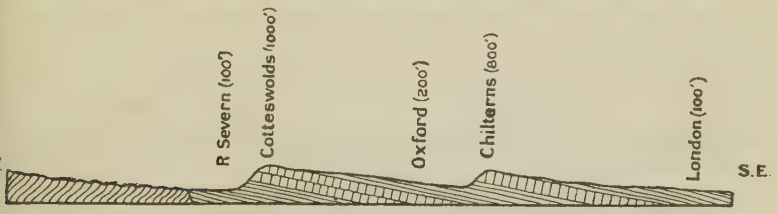

FIG. 10.—Section from Wales to London, showing how hard rocks may produce scarped hills. The Cotteswolds are produced by a band of hard limestone; the Chilterns by a band of hard chalk.

important being **Dartmoor** and **Exmoor.** The **Mendip Hills** form a plateau, rising in places to 1000 feet.

All the highland areas we have considered so far have had the structure of a dissected plateau. In addition to these there is in England a series of **ridges**, that run for many miles in long lines. These ridges have generally a steep slope on one side, and a very gentle slope on the other, and are therefore known as **escarpments** or scarps. The **Cotteswold Hills** are caused by a hard limestone band coming to the surface, along the line of these hills. This band runs without interruption, from near the Bristol Channel to the Humber. North of the Humber, it can still be traced until it curves out to sea, just south of the Tees. Only the south-west portion of this band is known as the Cotteswold Hills. In the extreme north the ridge is known as the **Cleveland Hills** of Yorkshire.

Another hard band of rock, this time of chalk, starts from the Thames west of Reading, and runs with an irregular, north-east course to the Wash. The southern part of this band is known as the **Chiltern Hills.** The ridge reappears between the Wash and the Humber, where it is known as the **Lincoln Wolds.** North of the Humber, the hills formed by the band are called the **Yorkshire Wolds,** and the band finally runs out to sea, in the chalk cliffs of **Flamborough Head.** Fig. 10 is a section from Wales to London, showing how the hard limestone and chalk bands have produced ridges, with a steep slope on one side, and a gentle slope on the other.

South of the Thames there are two lines of chalk hills, the

Fig. 11.—Section across the North and South Downs, showing how they have been produced from an arch of hard chalk.

North Downs and the **South Downs.** The North Downs present a very steep front to the south, and a very gentle slope to the north, while the northern edge of the South Downs is steep, and the southern slope gentle. These hills also are, therefore, escarpments or scarp ridges. They have been caused by a hard bed of chalk having been bent into an arch, the axis of which runs east and west. The crest of this axis has been worn away, and the two limbs of the arch form the two lines of hills. This is illustrated in Fig. 11.

RAILWAYS. The engineers of the lines have always tried to find the easiest ways, and it is interesting to notice how they have surmounted the difficulties that hilly ground always presents. We shall describe in detail two of the main lines from London to Scotland. You should follow the other important lines on the map, and try to find reasons for their running in the way they do.

London, Midland and Scottish Railway, West Coast Route. The West Coast Route starts from **Euston** Station, and runs north-west. The first important barrier it meets is the chalk ridge of the Chiltern Hills. The ridge, however, is cut through in several places by dry valleys, and the railway makes use of one of these at Berkhampstead (known as the **Berkhampstead Gap**), in order to cross this obstacle. The next difficulty is the limestone ridge (the continuation of the Cotteswolds), which is passed by a **tunnel near Rugby**. The line next runs through **Stafford** and **Crewe**, and has now passed the southern border of the Pennines. The route now is through Lancashire by way of **Wigan, Preston**, and **Lancaster.** A very hilly region now bars the way to Carlisle. The highlands are lowest and narrowest at the neck joining the Lake District mountains to the Pennines. In addition, this high ground is cut deeply on the south by the valley of the Lune, and on the north by a tributary of the Eden (the Petterill), so that the railway line climbs up the former valley, crosses the neck at **Shap Summit**, 1000 feet above sea-level, and runs down the Petterill valley to **Carlisle.** From Carlisle we shall trace it into Scotland later on.

London, Midland and Scottish Railway, Midland Route. The Midland Route starts from **St Pancras** Station, and as it intends to tap the traffic of the great communities situated east of the Pennines, its route gradually diverges from that of the West Coast Route, the Midland running north-north-west through **St Albans.** It finds a convenient route through the Chilterns by the **Lea Gap** (so called because drained by the River Lea), then runs through Bedford and crosses the limestone ridge near Market Harborough; it passes **Leicester** and **Nottingham,** enters Yorkshire, and goes through **Sheffield** to **Leeds.** It has, however, to reach Carlisle. It takes advantage, therefore, of the **Aire Gap**, climbs the Pennine Uplands by means of the **Ribble** valley, crosses the moors, reaching an altitude of nearly 1200 feet, and then utilises the long valley of the **Eden**, running straight towards **Carlisle.**

The **London and North-Eastern** also connects London with Scotland. The line runs from London through Huntingdon,

Peterborough, Doncaster, York, and Berwick. Another main line of the same railway connects London with the Midlands, and sends branches to Lancashire, Yorkshire, and other northern counties. A third main line of the London and North-Eastern runs to Harwich and Yarmouth.

The **Great Western Railway** connects London with nearly all the west of England and Wales from Cornwall to the Mersey. One line runs through Oxford, Birmingham, Shrewsbury, and Chester to Birkenhead. Lines connect Swansea, Cardiff, and Bristol with London. From Reading a branch leaves the Bristol line and goes by the Kennet valley to Exeter, Plymouth, and Penzance.

The **Southern Railway** connects London with the south coast of England from Penzance to Dover.

LONDON AND THE THAMES VALLEY. Trace the course of the Thames from its source in the **Cotteswold Hills** to its estuary. Its most important tributaries are the **Cherwell**, the **Colne**, and the **Lea**, on the left bank; and the **Kennet**, the **Wey**, and the **Mole**, on the right bank. The chalk ridge is divided by the Thames into two parts, the **Berkshire Downs** and the **Chiltern Hills**. The chalk ridge and the limestone ridge (the Cotteswolds) are important **sheep-rearing** districts. Most of the lower parts are rich, agricultural regions. Dairy-farming is important in the Vale of Aylesbury.

London has been a place of importance since Roman times. It stands at the **head of tidal navigation**, and its fine estuary forms a convenient route from the Continent to England. It is now the largest and wealthiest city in the world, its population amounting to about 7,000,000 people. It is by far the most important centre in Britain of science, literature, and art. Its most famous historical buildings are the **Tower of London**, **Westminster Abbey**, and **St Paul's Cathedral**. The **Houses of Parliament** are situated at Westminster Bridge. When the King and Queen are in London, they live at **Buckingham Palace**. Owing to the immense number of factories in the east-end, London is the greatest manufacturing city in the world. It is the greatest **seaport**

in the world, importing about 98 per cent. of the tea, over 80 per cent. of the rubber, and three-quarters of the coffee coming into Britain.

A few miles down the river is **Greenwich**, really continuous with London. It contains the observatory that sets the time for England and Scotland. Longitude is measured from Greenwich. Below it is **Woolwich**, with a great arsenal, where guns and ammunition are made. Going up the river from London we come to **Windsor**, with its royal castle, and opposite it the famous public school of **Eton**. At the junction of the Kennet and the Thames is **Reading**, an important centre for grain and seeds, and with large biscuit works. At the junction of the Cherwell and the Thames (or Isis, as this part of the Thames is often called) is **Oxford**, containing the oldest university in the country. It is a beautiful town, with fine old colleges and churches, and splendid gardens. The whole life of the town centres round the university. Notice the position of **Guildford** where the Wey breaks through the North Downs, and **Dorking** at the gap made by the Mole.

SOUTHERN ENGLAND. Southern England consists of two natural divisions, Devon and Cornwall being quite different in many respects from the rest of the region. From Dorset to Kent the high ground runs in long **east and west ridges**, that are caused by the occurrence of bands of hard chalk. Where cliffs occur along the coast, they are generally composed of chalk. In Devon and Cornwall the high ground occurs in **large masses**, and not in ridges.

The chalk hills of southern England are used for rearing sheep, while the fertile lowlands are devoted to agriculture. **Hops** and all kinds of **fruit** are grown, chiefly in Kent. In many places the chalk is used for making **cement**, and the flints found in it are used locally for road-metal. The towns along the coast are, as a rule, either **seaports** or **pleasure resorts**. The best known of the latter are **Brighton**, **Eastbourne**, and **Hastings**. The most important packet-stations for the Continent are **Dover**, connecting with Calais; **Folkestone**, with Boulogne; and **Newhaven**, with Dieppe.

Southampton is the most important town on the south coast. Off the entrance to Southampton Water lies the Isle of Wight,

forming two ways of access to Southampton: the **Solent** and **Spithead**. These two channels have had an important effect on the prosperity of Southampton, for the town has **four tides daily** instead of two, and thus the docks can be reached at any time. Its position as a port is exceptionally favourable for traffic, both with the Continent and America. At the present time it ranks **fifth** among the ports of England. The **Isle of Wight** is diamond-shaped, because a hard ridge of chalk runs across it from east to west. All round the coast are fashionable watering-places, the best known being **Cowes**, a great yachting centre. **Portsmouth** stands on a fine harbour branching from Spithead. It is the most important **naval station** in Britain, because, not only is the harbour good, but there is a chalk ridge to the north of it, which is strongly fortified and commands the entrance to the harbour. All along the coast the sea is making inroads on the land by cutting back the faces of the cliffs.

Most of the important inland towns are situated at **gaps** in the ridges, which form the easiest routes for roads and railways. **Guildford**, at the Wey gap, and **Dorking**, at the Mole gap, through the North Downs, have already been mentioned. **Lewes** is situated at an important gap in the South Downs. Just north of the point where the Stour emerges from the North Downs, is **Canterbury**, which is the seat of an archbishop, and contains the oldest cathedral in England. **Winchester** was for long the capital of England, and is an old cathedral town. **Salisbury** is another old historic town with a fine cathedral. On Salisbury Plain there is the great stone circle of Stonehenge.

In the south-west of England the high ground occurs in roughly circular masses. The three most important areas of high ground are **Exmoor, Dartmoor,** and the **Bodmin Moors.** Dartmoor, the Bodmin Moors, and the high areas near Land's End, are caused by the occurrence there of great **granite** masses which are not worn down by the weather so easily as the surrounding slaty rocks. The summits of the moors are known as *tors*. The top of **Yes Tor** in Dartmoor is over 2000 feet above sea-level. In places the granite

has decomposed into a soft, white clay called **kaolin**, or **china-clay**, which is dug out and sent to various manufacturing districts of Britain for the making of china. The granite also has been the cause of the valuable deposits of **tin-ore**. By far the largest share of these minerals is produced by Cornwall. The granite and the slate are quarried for building-stone.

The climate of the south-western peninsula is exceptionally mild, so that the coast towns are popular winter resorts. In the fertile valleys early vegetables and flowers are grown. This is especially the case in the **Scilly Isles**, which were probably once joined to Cornwall. The mildness and moisture of the climate of the south-west is the cause of much rich pasture-land, and so **dairy-farming** is important both in Devon and Cornwall. Apples are largely grown in Devon, and large quantities of cider are made. The **fisheries** round the coast are valuable.

The most important towns are situated at the mouths of rivers, the estuaries of which form good harbours. The triple town of **Plymouth**, Devonport, and Stonehouse is on the splendid harbour of Plymouth Sound, the estuary of the Tamar. It is a naval station and a port of call, at which ocean steamers land their mails and passengers for London. In the offing is Eddystone Lighthouse. **Exeter** is at the head of the estuary of the Exe, and contains a fine cathedral. **Torquay**, on Tor Bay, is a watering-place with an exceptionally mild climate. **Penzance** and **St Ives** are Cornish fishing centres. Devonshire is renowned for the number of famous seamen that have been born there.

EASTERN ENGLAND. As we trace the ridges of chalk and limestone known as the Chilterns and the Cotteswolds to the north-east, we find them gradually becoming lower, although they can nearly always be distinctly seen. The chalk ridge in Suffolk and Norfolk is called the **East Anglian Heights**. North of the Wash it appears as the **Lincolnshire Wolds**, and north of the Humber as the **Yorkshire Wolds**. The rest of eastern England, between the Thames and the Humber, consists of an undulating plain. The low district that lies round the Wash and forms the delta of the **Ouse**

and its neighbouring rivers is known as the **Fens**. Most of the district was formerly under water, but is now drained, and forms rich arable land. On the other hand, along many parts of the coast the sea is making serious inroads on the land. The eastern counties form the most important agricultural district in the country. **Wheat and barley** are largely grown. Round the coast **fisheries** are very important, for the valuable North Sea banks are near at hand.

As most of the region is agricultural, there are not many large towns. The most important are situated on the coast. **Norwich** and **Ipswich** make agricultural tools and machinery. **Harwich** is a very important packet-station for Germany. It connects with the Hook of Holland, whence express trains run to Berlin, and right on to Moscow and Leningrad. The great fishing centres are **Yarmouth** and **Lowestoft**. All along the coast the little towns cater largely for summer visitors. In the interior, **Cambridge, Peterborough,** and **Bedford** are situated at the margin of the fens. Cambridge is noted chiefly for its great university. Peterborough has a famous cathedral. **Ely** is a cathedral town in the midst of the fens.

Across the Wash, **Lincoln** has grown up where the Witham breaks through the limestone ridge. Roads and railways find an easy route through this gap, so that we might have expected an important town here. It is situated in the centre of a rich agricultural district, and has become an important place for the manufacture of agricultural machinery. It has a beautiful cathedral, and, as its name shows, its history goes back to Roman times. **Grimsby**, on the Humber, has a large trade with the Continent, but it is most noted as a great fishing centre.

THE MIDLANDS. The Midlands of England may be considered as the plain bounded on the south and east by the Cotteswolds and the continuation of the limestone ridge, on the west by the Severn, and on the north by the Trent. Birmingham lies in the very heart of the Midlands, just to the east of the **South Staffordshire Coal-field.** This coal-field formerly contained valuable deposits of iron-ore, now

almost exhausted, so that many important iron towns are situated here. **Wolverhampton, Walsall, Wednesbury,** and **Dudley** are all engaged in the iron trade. The whole district is crowded with towns and villages engaged in the coal and iron trade, and is, therefore, known as the **Black Country. Birmingham** is not on the coal-field, so that the actual smelting of iron is not carried on there. It specialises in brass-making, and also makes machinery, pins and needles, screws, motor-cars, cycles, guns, and ammunition. Birmingham is a long way from any important seaport, so that it cannot compete with other places in the cruder processes of manufacture, where large quantities are handled at cheap rates. The value of the workmanship of its products counts for more than the value of the raw material, and therefore slightly increased transport rates are insignificant compared with the total value of the articles. Birmingham contains a modern and well-equipped university. Seventeen miles south-east of Birmingham is **Coventry**, manufacturing cycles, motor-cars, big guns, and silk-ribbons. **Warwick**, on the River Avon, has a splendid old castle; while lower down the river is **Stratford-on-Avon,** the birthplace of Shakespeare. **Rugby** is an important station on the London, Midland and Scottish Railway, and has large electrical works. Its public school is famous.

The **North Staffordshire Coal-field** is the great centre in this country for the making of earthenware and china. The district is therefore known as **The Potteries.** Local clay is used for coarse work, while for fine porcelain, china-clay is imported from the south of England. The chief city is **Stoke-on-Trent.** Lower down the Trent is the town of **Burton-on-Trent**, with some of the greatest breweries in the world. The brewing industry finds the necessary "hard" water in the district, and the barley required is grown abundantly in the eastern counties. **Derby** is an important railway centre on the Midland line, and makes locomotives and motor-cars. **Nottingham**, on the Trent, is at the southern extremity of the great **Yorks, Derby, and Notts Coal-field.** It manufactures lace and hosiery. **Leicester** is an important station

on the L.M. and S. Railway. The number of sheep and cattle in Leicestershire is above the average, so that it is natural to find that the characteristic industries of the town of Leicester are hosiery manufacturing and boot-making. Northamptonshire is another important cattle-rearing county, and the town of **Northampton** is the greatest boot- and shoe-making centre in Britain. The limestone ridge runs through the eastern part of the shire, and valuable deposits of **iron-ore** are obtained from it.

THE SEVERN VALLEY AND ESTUARY. The Severn rises in the Welsh hills, and at first flows north-east. Its course is then south, and finally south-west. It forms a good means of communication between the towns of the western Midlands and the sea. The **Malvern Hills** rise not far from the right bank, while on the east the steep slope of the **Cotteswolds** can be seen parallel to the river. The tides that come up the Severn estuary are hemmed in closer and closer as they come inland, until a swiftly moving wall of water is formed. This is the well-known **bore** of the Severn. The district near the junction of the Severn and the Avon is a splendid **orchard** region. **Salt** is got from brine at **Droitwich**. **Shrewsbury**, on the upper Severn, is a very important railway junction. **Worcester** is noted for its fine china. **Kidderminster** is a carpet-making town. The seaport town of the River Severn is **Gloucester**, but the difficulties of navigation, caused by the bore, have kept it from rising to the first rank. It imports large quantities of grain, and exports iron-goods, coal, and salt. The county of Hereford, on the Welsh border, is drained by the **Wye**. It has an unusually dry and sunny climate, and its orchards and hop-gardens are famous.

The **Severn Tunnel**, five miles long, is the longest in Britain, and passes under the estuary of the Severn. It forms a direct route from South Wales to Bristol and London. **Bristol** is situated where the Bristol Avon cuts through the limestone ridge of the Cotteswolds, thus forming a channel for traffic from south-east England to the Irish Sea and the Atlantic Ocean. Large docks have been built where the river enters the Bristol Channel, and the city has a great trade with America and the West Indies. Tobacco, sugar,

cocoa, and fruit are imported in large quantities. East of the town is the **Bristol Coal-field**, lying between Bristol and Bath. **Bath** is noted for its hot springs. It is, consequently, a fashionable health-resort. The sheep reared on the **Mendip Hills** and the neighbouring limestone and chalk ridges originated the West of England woollen industry at **Bradford** and **Trowbridge**, on the Avon.

WALES. The highlands of Wales form the highest mountainous region south of the Scottish Highlands. The district is a dissected plateau, and, with its strong contrasts of mountains, lakes, and valleys, forms a region that is exceedingly attractive to the mountain-climber and the tourist. The highlands of Wales still retain clear evidence that the valleys were once occupied by large **glaciers.** The rocks are smoothed and scratched, and "moraines"—the débris brought down by glaciers—are found in many places. Wide amphi-theatres among the hills (called *cwms* in Wales, and *corries* in Scotland) are believed to have been carved out by glaciers.

On the grassy slopes of the hills large numbers of **sheep** are reared. The low island of **Anglesey** is an important cattle-rearing district.

The most important industrial factor in Wales is the rich **South Wales Coal-field.** It produces a kind of coal that gives out very little smoke when burning, and is known as "steam coal," or "smokeless coal." It is especially valuable for ships, and thus the South Wales Coal-field exports more coal than any other field in Britain. It is drained by streams flowing to the Bristol Channel, down the valleys of which the coal is taken to the seaports at their mouths. The chief of these streams are the **Taff** and the **Tawe.** At the mouth of the Taff is **Cardiff**, the greatest coal-exporting town in Britain. It is now the third seaport of the United Kingdom, almost rivalling Liverpool in the tonnage handled. Iron-smelting is also important. **Newport** and **Barry** also export large quantities of coal. **Swansea**, at the mouth of the Tawe, besides exporting coal, is engaged largely in the **smelting of copper and tin.** This industry arose first in Swansea because of its nearness to Cornwall, but though the Cornish ores are largely exhausted, Swansea still continues its smelting by making

use of Spanish copper and East Indian tin. This is a good example of the way in which industries persist in places, even when the original advantages have disappeared. Swansea is also the centre of the **tin-plate** industry, that is, the coating of iron sheets with tin for making household utensils, and "tins" and "cans" of every description.

In the north of the coal-field the iron industry is very important. **Merthyr Tydfil**, in the upper Taff valley, is the best-known town making use of the coal for the smelting of iron. **Fishguard** is an important railway terminus in connection with boat traffic to Ireland and America.

Round the Welsh coasts are dotted little towns frequented by summer visitors. The best known of these are **Aberystwith**, on the west coast, and **Llandudno**, on the north coast. In the north-east of Wales there is another **coal-field**, not nearly so important as that in the south. **Slate** of very fine quality is worked in the Snowdon district. Flintshire produces large quantities of **lead** and **zinc ores**. **Holyhead**, on Holyhead Island, is an important port for the Irish trade. It is just over 60 miles from Dublin. The railway connecting Holyhead with Bangor and Chester crosses the **Menai Straits** by a tubular bridge.

NORTHERN ENGLAND. Northern England is divided into two parts by the Pennine Uplands, which form a continuous barrier between the east and the west from the Scottish border to the Midlands. The southern part of the Pennines is known as the **Peak District**. The name is misleading, as the hill summits are generally flat-topped moors. These bare and lonely moors are intersected by very beautiful valleys, so that the Peak District is a favourite place for tourists. The southern part of the Peak District is a **limestone region**, with all the peculiarities of such a district. There are huge caverns among the limestone rocks, and the rivers at times disappear in great holes, and run for long distances underground. **Lead** ore is obtained in considerable quantities, and a beautiful, purple mineral called **fluorspar** is quarried, for making vases and ornaments. The **limestone** is worked for building-stone, and also for burning into lime.

Matlock and **Buxton**, with mineral springs, are health-resorts and tourist centres.

Between the south end of the Pennines and the Welsh Highlands is the **Midland Gate**, a broad and easy route from London and the south-east to the Irish Sea. **Crewe**, an important railway junction on the L.M. and S. Railway, is situated here. The railway has large locomotive works in the town. **Chester**, an interesting old town founded by the Romans, is also a railway centre. In this broad, flat area, sometimes called the Cheshire Plain, there are extensive beds of **rock-salt** mined at **Nantwich** and **Northwich**. It is also a rich grazing district, and **dairy-farming** and the rearing of cattle are largely carried on in Cheshire. Salt is largely used in the making of certain chemicals, so that we find **chemical industries** carried on by the towns on the southern border of the Lancashire Coal-field. One of the chief centres of this manufacture is **St Helens**, which has also large glassworks.

The **Lancashire Coal-field** requires all its coal for its numerous and large manufacturing towns, nearly all engaged in the manufacture of **cotton**. A **moist climate** is desirable for the spinning and weaving of cotton, so that we find all the cotton towns situated on the west side of the Pennines. The making of cotton is the most important manufacture in the country, the value of the exports being more than double that of any other class of goods. The cotton towns are grouped round **Manchester**, which, with **Salford**, has nearly a million inhabitants. Comparatively little cotton is manufactured in Manchester itself, but it is a convenient centre for importing, exporting, buying, selling, and distributing the cotton. **Machinery** is largely made. Since the opening of the Ship Canal to Liverpool, Manchester has become an important **seaport**. In 1924 it easily surpassed Glasgow in the value of its trade (though not in tonnage), and took the **fourth** place in this respect among the seaports of the United Kingdom. The most important of the other cotton towns are **Bolton**, **Bury**, **Rochdale**, **Blackburn**, **Preston**, **Burnley**, and **Oldham**. The raw cotton used in the Lancashire mills must all be imported from warmer countries, chiefly from the United States, Egypt, and India.

The most important seaport for all this district is **Liverpool,** which as a port is second only to London. The **Mersey** is lined with docks for miles, the terminus of the great American steamship lines. Of these, the most important are the **Cunard** and the **White Star** lines. Raw cotton is by far the most valuable import, and cotton goods the most valuable export. On the opposite side of the Mersey is **Birkenhead,** with engineering and shipbuilding industries.

On the Lancashire coast, **Blackpool** is an important seaside resort. **Fleetwood** and **Heysham** are packet-stations for the Isle of Man and Ireland. In the Furness district of Lancashire, valuable deposits of **iron-ore** are found. This has led to the marvellously

FIG. 12.—Section across Pennines, showing how the Coal-fields are found only on the flanks of the hills.

rapid growth of **Barrow-in-Furness,** an important **iron-smelting** and **shipbuilding** town.

On the east side of the Pennines the coal-measures reappear again. Fig. 12 shows how they once extended right across the country in a great arch, but have been worn away in the centre, so that now they appear only on the flanks of the Pennines. The **Yorks, Derby, and Notts Coal-field** on the east of the Pennines is the most productive in the kingdom. The most important manufacture that has sprung up in this district is the **woollen industry** of the West Riding of Yorkshire. This industry originated from local supplies of wool obtained from the sheep-rearing districts of the Pennines. Great quantities of wool are now imported from Australia, New Zealand, South Africa, etc. The largest towns are situated on the **River Aire** or its tributaries. **Leeds** and **Bradford** are the most important, while of the other woollen towns, **Halifax, Huddersfield,** and **Wakefield** are the most noteworthy. On the coal-field in the

south of Yorkshire is **Sheffield**, noted for its **steel** and **cutlery**. Armour-plates for battleships, steel-rails, and machinery of all kinds are also made. The main line of the London, Midland and Scottish Railway passes through Sheffield and Leeds.

East of the Pennine Uplands stretches the **Plain of York**, a rich agricultural region. The chief town of the plain is **York**. The town has a beautiful cathedral, and is the seat of an archbishop. It is on the main East Coast line, between Scotland and London.

Still farther east there are two hill ranges, the **Cleveland Hills** and the **Yorkshire Wolds**. The former contain very rich deposits of **iron-ore**, and it is owing to this fact that **Middlesbrough**, on the Tees, is the centre of the most important iron district in Britain.

On the Yorkshire coast the most noteworthy towns are **Scarborough**, a fashionable watering-place, and **Whitby**, a fishing village and summer resort.

The second largest port in the north-east of England is **Hull**, which ranks sixth among the ports of Britain. As might be expected, its trade is chiefly with the Continent, to which it exports the woollen goods of Yorkshire and the cotton goods of Lancashire. It is the nearest large port to the Dogger Bank, and is therefore an important fishing-station.

The Lake District. The lake district is a beautiful region of mountains, valleys, and lakes. The district has the structure of a **dissected dome**, from the centre of which the lakes and valleys radiate somewhat like the spokes of a wheel. The Lake District is famed for its splendid scenery, and large numbers of tourists visit it in summer-time. The peaks and pinnacles round **Scafell** and **Great Gable** are well known to mountaineers, who find there very difficult **rock-climbing**.

In many respects the Lake District shows a great **resemblance to Wales**. The character of the **scenery** is similar, **slates** are quarried, **lead** and **zinc** are mined, and the pasture on the hill-slopes sustains large numbers of **sheep**. The best-known tourist centres are the towns of **Keswick** and **Ambleside**, beautifully situated on Derwentwater and Windermere respectively. Keswick makes lead-pencils

the graphite of which used to be obtained in the neighbourhood, but the local mines are exhausted, although the industry by the use of imported graphite still continues. The most important railway is a line that runs from **Penrith** (on the London, Midland and Scottish Railway), through Keswick to Cockermouth.

Cumberland Coal-field. Along the coast to the north-west of the Lake District occurs the Cumberland Coal-field. Note its position from the map on p. 22. The workings penetrate far under the sea. The coal is exported from **Whitehaven** and **Maryport.**

Eden Valley. We have seen how one main line of the London, Midland and Scottish Railway uses the Eden valley as a route from Yorkshire to the north. It joins another main line of the London, Midland and Scottish Railway at **Carlisle**, the largest town in this district, and a **great railway centre.** Three main lines from Scotland come into Carlisle from the north. The town is also joined to Newcastle by a line across the Pennines through the **Tyne Gap.**

Thus we may conclude that Carlisle owes its prosperity chiefly to the fact that it stands at the **crossing of several important routes.**

Northumberland and Durham Coal-field. The chief rivers of this district are the **Tyne** (North Tyne from the Cheviots, South Tyne from the Pennines), the **Wear** and the **Tees.** The Tyne is the greatest **shipbuilding** centre in England, and is followed closely by the Wear and the Tees. The largest town on the Tyne is **Newcastle.** It stands where the north and south (East Coast) route from England to Scotland crosses the east and west route across the Pennines by the Tyne Gap. More important still, it is situated at the head of an estuary that penetrates a rich coal-field. There is thus a large export trade in **coal** to other British towns. Heavy **guns** are made, and there are large **chemical works** that use the salt found in the neighbourhood. It is the chief port of north-east England, ranking fourth among the ports of Britain.

The other towns on the estuary — **Tynemouth** and **South Shields**—are also engaged in various branches of the coal and iron trade. At the mouth of the Wear, **Sunderland** is a great **shipbuilding** centre. Higher up the river is **Durham,** with a

university and an old cathedral. In the Tees basin, **Darlington, Stockton,** and **Hartlepool** are all engaged in the **coal** and **iron** trade, and contain large **engineering** and **locomotive** works.

ISLE OF MAN. The Isle of Man, in the Irish Sea, is almost equidistant from England, Scotland, and Ireland. The north of the island is low, but in the centre **Snaefell** rises over 2000 feet above sea-level. There are valuable mines of **lead**, and **slates** are quarried. The pasture-land is good, and therefore **cattle** and **sheep** are reared. The scenery of the Isle of Man is very beautiful and the climate is good, the summers being very sunny, so that great numbers of tourists visit the island every year. **Douglas** and **Ramsey**, both on magnificent bays on the east coast, are the chief centres for visitors. The Isle of Man manages its own affairs, under the superintendence of a governor appointed by the Crown. The ruling body is called the **House of Keys.**

CHANNEL ISLANDS. The Channel Islands lie off the coast of Normandy, and in some ways are more akin to France than to Britain. The chief islands are **Jersey, Guernsey,** and **Alderney.** The soil is fertile, and the growing of **early vegetables** and **fruit** for the English market is the most important branch of agriculture. Each of the islands mentioned possesses a special breed of cattle, named after the island. A dialect of French is still common, though English is rapidly taking its place.

SCOTLAND.

DIMENSIONS. From the map facing p. 48, find some of the most important dimensions of Scotland. Measure the distance from Cape Wrath to the Mull of Galloway, and, from the scale, find how many miles this distance represents. Find also the width of Scotland, where it is broadest, and its width where it is narrowest between the Firth of Forth and the Firth of Clyde.

DIVISIONS. It will be seen that the high ground of Scotland is arranged in two great masses, one in the north and one in the south, between which is a belt of low ground. Imagine a line

drawn from **Stonehaven** in Kincardine to **Helensburgh** on the Firth of Clyde, and another from **Dunbar** in Haddington to **Girvan** in Ayrshire. These two lines divide Scotland into **three natural districts**, known as the **Highlands**, the **Central Lowlands**, and the **Southern Uplands**. The whole of Scotland has been cracked along these two lines, and the middle band (the Central Lowlands) has sunk between the high masses to the north-west and the south-east.

The Highlands, again, are divided into two parts by another crack or fault that has formed the long, narrow, and deep valley of **Glen More**. All the mountainous area to the south-east of this line may be called the **Grampian Highlands**,[1] while the Highlands to the north-west of Glen More are known as the **North-west Highlands**. The chain of the Outer Hebrides was probably many ages ago a part of the North-west Highlands, but the part now occupied by the Minch sank down between two faults, just as the Central Lowlands did, only to a greater extent, so that it is now covered by the sea.

HILLS OF THE LOWLANDS. The Central Lowlands do not consist entirely of low land. There are several hill masses that rise to nearly 2000 feet in height. The most important of these are the **Sidlaw Hills**, the **Ochil Hills**, the **Campsie Fells**, the **Pentland Hills**. Identify all these hills on the coloured map. It is important to notice that these hills are not ranges; they are large blocks or slabs of high ground, and are the remnants of a much larger plateau. They are all formed of volcanic rock that has not been worn away by the weather so quickly as the surrounding softer rocks, and, therefore, these parts stand up as high masses.

RAILWAYS. London, Midland and Scottish Route. This railway runs south-west from Glasgow to a narrow valley between two masses of high ground, which, from the town at its mouth, may be called the **Barrhead Gap**. By means of this valley it

[1] There are objections to this name, but, on the whole, it seems the most suitable. The terms "Grampian Mountains" and "Grampian Range" should be avoided, for in the tumbled sea of peaks known generally as the Highlands, no definite range can be singled out to which the name Grampian Mountains or Grampian Range can be properly applied.

reaches the low **Ayrshire plain**, and, passing **Kilmarnock**, it runs south-east. The Southern Uplands constitute a formidable barrier between Ayrshire and the Solway, but they are trenched completely through by the deep valley of the **Nith**. From **Cumnock**, therefore, the line goes over a pass about 700 feet above sea-level, and then runs by an easy route down the valley of the Nith to **Dumfries**. It skirts the low shores of the Solway Firth, crosses the Sark into England, and at **Carlisle** links up with the Midland Route of England.

From Edinburgh the **London and North-Eastern** takes the East Coast Route by Dunbar to Berwick, where it joins the line previously described (p. 27). From Glasgow another branch of the L.M.S. runs up the **Clyde** valley as far as Elvanfoot, then crosses by **Beattock Summit** (1000 feet) to the **Annan** valley, and so by an easy route reaches **Carlisle**, where it joins the West Coast Route of the L.M.S. Carlisle is connected with Edinburgh by a branch of the L.M.S. Railway from **Carstairs**, and by a L.N.E. line which goes up Liddesdale, across the hills to the Teviot and the Tweed, up Gala Water, and passing west of Dalkeith enters Edinburgh from the east.

Follow on the map the L.N.E. and the L.M.S. lines from Glasgow to Edinburgh, the L.M.S. line from Perth to Inverness and the north, the L.N.E. line from Glasgow to Fort William and Mallaig, and another branch of the same line from Edinburgh and Glasgow across the Forth Bridge and the Tay Bridge to Dundee and Aberdeen. From Aberdeen the line runs round the Moray Firth.

THE SOUTHERN UPLANDS. The Southern Uplands form a dissected plateau that runs right across Scotland from north-east to south-west. The **Moorfoot Hills** and the **Lammermuir Hills** really form part of the north-east edge of the Southern Uplands. The part south of the Tweed between England and Scotland is called the **Cheviot Hills**. The Southern Uplands are not so high as the Highlands, nor are they so rugged. They do not usually stand up in pinnacles and crags, but are rounded in shape and have smooth slopes. Their summits are bare moors, but there are extensive grassy

slopes that are used for grazing **sheep**. The highest summits are **Merrick** (2764 feet), **Broad Law** (2754 feet), and **Hart Fell** (2651 feet).

The river-valleys of the Southern Uplands are fertile, and good crops are grown there. Berwickshire is a flat district, where much **wheat** is grown. In Wigtownshire, **dairy-farming** is important. In the Lowther Hills, on the borders of Lanarkshire and Dumfriesshire, **lead-mining** has been carried on for hundreds of years, and this is the only part of Scotland where lead is mined at the present time. In Dumfriesshire there are valuable quarries of **red freestone**, and in Kirkcudbright **granite** is worked. All over the Southern Uplands **sheep-farming** is important. Roxburgh has more sheep in proportion to its size than any other county in Britain. As the result of this, an important **woollen** industry has grown up, particularly in the Tweed valley. The chief towns engaged in manufacturing tweed and hosiery are **Hawick**, on the Teviot, and **Galashiels**, on the Gala, both on the "Waverley" railway route from Edinburgh to Carlisle. **Dumfries** is situated on the Nith, at the lowest point at which the river can be bridged conveniently, and is on one of the main L.M.S. lines from Carlisle to Glasgow. It is the commercial centre of the south-western counties, and is the market for much of the agricultural produce and live-stock of the south. There are several woollen mills.

THE CENTRAL LOWLANDS. The hills of the Central Lowlands have already been described. Most of these hill-masses are arranged in a line roughly parallel to the edge of the Grampian Highlands, and about ten miles from it. The belt of low ground between the hills and the Highlands is called **Strathmore**. The breaks between the volcanic hills of the Lowlands have been caused by rivers, the chief of which are the **Clyde**, the **Forth**, and the **Tay**. From the earliest times the gaps made by these rivers have been used as the easiest routes between different parts of the Lowlands, and therefore we find old and important towns at these gaps. On the Tay is **Perth**, on the Forth is **Stirling**, and on the Clyde is **Dumbarton**.

THE EAST COAST. In its situation, **Edinburgh**, the capital of Scotland, is very similar to Stirling and Dumbarton. It stands where the Pentland Hills come close to the sea, and therefore all **traffic** along the east coast **must pass near Edinburgh.** Like Dumbarton and Stirling, again, Edinburgh grew up round a strong castle situated on a high rock and commanding an important route. Most people consider Edinburgh the most beautiful city in Scotland, and its fine old buildings, such as **Holyrood Palace, Edinburgh Castle,** and **St Giles' Church,** are rich in historical associations. Edinburgh contains the chief **Law Courts** of Scotland, and has a famous **university.** It has an important **printing** and **paper** trade, and large **breweries** and **distilleries.** The local water is specially suitable for brewing and distilling, and barley is largely grown in the Lothians. **Leith** is the port of Edinburgh, and is continuous with it. As a Scottish seaport it ranks next to Glasgow. Its foreign trade is almost entirely with the continent of Europe. Higher up the Firth of Forth, **Grangemouth** is an important seaport. It also has a large trade with the Continent, and it stands at the end of the Forth and Clyde Canal. Three miles inland from Grangemouth, on the Forth and Clyde Canal and on the North British line between Edinburgh and Glasgow, is **Falkirk.** Its cattle-markets, once so famous, are now of little importance since auction sales became so general. Near Falkirk are several large **iron-works,** the chief centre being Carron, long famous for its manufacture of cannon and shot, and still unrivalled in the production of certain kinds of iron goods.

In Fifeshire, **Dunfermline** manufactures fine linen goods, and **Kirkcaldy** is noted for its oil-cloth and linoleum. **Methil** has recently sprung into prominence as the greatest coal-exporting town on the east coast of Scotland. It is situated where the Fifeshire Coal-field touches the sea. **St Andrews** contains the oldest university in Scotland, but is perhaps best known as the most famous golfing centre in the world. In point of size, **Dundee,** on the north shore of the Firth of Tay, ranks third among the cities of Scotland. Its chief industry is the manufacture of **jute** into sacks, carpets, and other articles. It also manufactures **coarse linen**

goods, and **jam-making** is important. The L.N.E. Railway (across the Tay Bridge) and the L.M.S. Railway meet at Dundee. Other towns in Forfarshire are **Arbroath** and **Montrose**, both of which manufacture **linen** goods and are **fishing** towns.

THE CLYDE BASIN. In early times the east coast of Scotland facing the North Sea was in a much better position for trade than the west, and so all the chief towns were near the east coast. Since the American trade became so valuable, however, seaports on the Atlantic side of Britain have grown largely. The Clyde towns have all shared in this growth of prosperity, of which the most important factor has been the rich **Lanarkshire Coal-field**. In this coal-field there are valuable deposits of **iron-ore**, although they are now partly exhausted, and ore has to be imported for the numerous blast-furnaces of Lanarkshire. In the east of Lanarkshire **oil-shale** occurs, although by far the richest deposits of this mineral are in Linlithgow, **Bathgate** and **Broxburn** being the centres of the industry. The shale is distilled, and paraffin-oil and paraffin-wax are obtained.

The principal town on the Clyde is **Glasgow**, the largest city in Scotland, and the second in the kingdom. It has been an important place for a long time, because it stands at the **crossing of routes**. Traffic up both sides of the estuary meets at Glasgow, because it is situated at the lowest point at which the river is bridged. The town stands at the west end of the route across Scotland where the country is narrowest. Two easy routes from the rich Ayrshire plain, namely, by Paisley and by Barrhead, meet at Glasgow. It stands at the end of the easy road from England by Annandale and Clydesdale. In the last hundred years it has grown very rapidly because of the development of the coal and iron in the neighbourhood, and now contains over a million inhabitants. It has important **cotton** manufactures. Almost every branch of the **engineering** industry is found, its **locomotive** works being the largest in the kingdom. It has great **chemical** industries, and as a **seaport** it ranks fourth in the United Kingdom for the tonnage entering and leaving it. Great sums of money have

been spent in making the Clyde navigable for large vessels as far as Glasgow.

At Glasgow, **shipbuilding** begins. The **Clyde** is the greatest shipbuilding centre in the world. In 1919 the tonnage turned out from various centres was as follows:—

The Clyde .	646.000 tons	The Wear .	279,000 tons
The Tyne .	286,000 „	The Tees .	205,000 „

The Clyde yards stretch at intervals on both sides of the river from Glasgow to **Dumbarton** and **Greenock.** In addition to shipbuilding, both these towns have large **engineering** works, and in Greenock **sugar-refining** is still carried on, although it has suffered severely from the making of beet-sugar on the Continent. **Port-Glasgow** is another important shipbuilding town. **Clydebank** is an **engineering** and **shipbuilding** town that is growing with great rapidity. Seven miles to the south-west of Glasgow, **Paisley** has an immense **cotton-thread** industry and large **engineering** works.

The large towns in the Clyde valley above Glasgow are situated on the Lanarkshire coal-field, and are all engaged in various branches of the coal and iron trade. Before the coal-field was worked, there was not a single large town in the district. Above Glasgow there is no large town quite on the Clyde, because the river here is of no commercial importance, the railways being the chief means of communication. **Hamilton** and **Motherwell** stand on opposite sides of the Clyde, a mile or two from the river. Both are important **coal** towns, and Motherwell has large **steel** works. **Coatbridge** and **Airdrie** stand side by side on the northern part of the coal-field. Both are engaged in the coal and iron trade, **Coatbridge** producing more **pig-iron** than any other town in Scotland. Farther up the valley is **Wishaw**, beside some specially fine coal-seams. In all these towns there are large **engineering** works. **Lanark** is an old historic town, which stands on a part of the Clyde where the river scenery is very beautiful. Near it are the famous Falls of Clyde.

The banks of the Clyde, for several miles below Lanark, form the richest **fruit-growing** district in Scotland.

THE AYRSHIRE PLAIN. The large towns in Ayrshire have grown up by using the power supplied by the **Ayrshire coal-field.** As in Lanarkshire, all the materials for iron-smelting are at hand. Abundance of limestone is found in the neighbourhood, and Ayr produces more **iron-ore** than any other county in Scotland. Most of the iron-ore, however, is imported from Spain. Outside of the coal-field the district is a rich agricultural one, **dairy-farming** and **potato-growing** being specially noteworthy. **Kilmarnock**, the most important town, has **engineering** works and **woollen** manufactures. **Ayr** and **Ardrossan** are seaports that **export** the **coal** of the neighbouring coal-field.

THE HIGHLANDS. The Highlands form the best example in Britain of a **dissected plateau.** The western part is much more cut up by lochs and valleys than the eastern. Look at the rainfall map on p. 17, and you will notice one reason for this, namely, that the West Highlands are one of the rainiest parts of Britain, while by the time the prevailing west winds have reached the east of Scotland, much of their moisture has been extracted. **Ben Nevis** (4406 feet) is the highest mountain in Britain. Other peaks more than 4000 feet in height are **Ben Macdhui, Braeriach, Cairntoul,** and **Cairngorm,** all near one another on the borders of Banff, Aberdeen, and Inverness. This is the highest *mountain group* in Britain. Identify these peaks on a map. Most parts of the Highlands are barren and unfit for farming. On the hill-slopes considerable numbers of **sheep** are pastured, but wide areas are used only as **grouse-moors** or **deer-forests.** It should be noted that, except in the valleys, there is hardly a tree on many so-called forests.

The scenery of the Highlands is exceptionally fine, and certain parts are visited in summer by thousands of tourists. One of the best-known districts is that round **Loch Lomond** and **Loch Katrine.** The **Trossachs** is the name given to the beautiful valley between Loch Achray and Loch Katrine. Perhaps the most striking feature

SCOTLAND
OROGRAPHICAL
English Miles
0 10 20 30 40 50
Butt of Lewis
Flannan or Seven Hunters
Stornoway
Eye Peninsula
LEWIS
Scarpa
Taransay
Pabbay
Berneray
North Uist
Little Minch
Benbecula
South Uist
Eriskay
Barra
Barra Isles
Hecla
Barra Head
OUTER HEBRIDES
Sound of Harris
HARRIS
The Minch
Loch Roag
Loch Erisort
Loch Seaforth
Loch Resort
Loch Maree
Loch Broom
Ullapool
Summer Isles
Stoer Head
Eddrachilles Bay
Kinlochbervie
Handa I.
Cape Wrath
Orkney or Pentland Firth
Loch Eriboll
Tongue
Ben Loyal
Ben Klibrick
Ben Hope
Ben Hee
Ben Stack
Ben Arkle
Ben More Assynt
Ben Wyvis
Loch Shin
Loch Assynt
Loch Inver
Loch Broom
Loch Ewe
Loch Torridon
Loch Kishorn
Loch Carron
Loch Alsh
Loch Duich
Loch Hourn
Loch Nevis
Loch Morar
Loch Shiel
Loch Sunart
Loch Linnhe
Loch Leven
Loch Etive
Loch Creran
Loch Fyne
Loch Long
Loch Goil
Loch Striven
Loch Ryan
Loch Indaal
Loch Gruinard
Loch Broom
Loch Maree

ATLANTIC OCEAN
NORTH CHANNEL
IRISH SEA
ENGLAND
IRELAND
PERTH
ARGYLL
FIFE
STIRLING
DUMBARTON
RENFREW
LANARK
AYR
DUMFRIES
KIRKCUDBRIGHT
WIGTOWN
EDINBURGH
HADDINGTON
BERWICK
PEEBLES
SELKIRK
ROXBURGH
Colonsay
Oronsay
JURA
ISLAY
Scarba
Iona
Staffa
Ulva
Tiree
Mull
Firth of Lorne
Sound of Jura
Passage of Colonsay
Sanaig Pt.
Rhinns Pt.
Gigha I.
Mull of Oe
Kintyre
Arran
Firth of Clyde
Ailsa Craig
Pladda I.
Campbeltown
Mull of Cantyre
Rathlin I.
Girvan
Ayr
Troon
Irvine
Kilmarnock
Paisley
Glasgow
Greenock
Dumbarton
Rothesay
Inveraray
Ben Cruachan
Ben Lui
Ben Lomond
Ben Ledi
Ben Vorlich
Ben Chonzie
Ben Cleuch
Ben Venue
Ben Voirlich
Ben Cruachan
Callander
Crieff
Perth
Dunkeld
Dunsinane Hill
Sidlaw Hills
DUNDEE
Broughty Ferry
Buddon Ness
Bell Rock
St. Andrews Bay
St. Andrews
Cupar
Fife Ness
Anstruther
Isle of May
Ochil Hills
Kinross
Loch Leven
Dunfermline
Kirkcaldy
Firth of Forth
North Berwick
Bass Rock
Bonnybridge
Falkirk
Linlithgow
Edinburgh
Leith
Musselburgh
Dalkeith
Haddington
Dunbar
St. Abbs Hd.
Eyemouth
Berwick on Tweed
Holy I.
Lammermuir Hills
Dunse
Coldstream
Kelso
Jedburgh
Cheviot
Hawick
Teviot
Liddesdale
Moorfoot Hills
Gala Water
Galashiels
Melrose
Tweed
Peebles
Selkirk
Lanark
Hamilton
Motherwell
Wishaw
Coatbridge
Airdrie
Cumbernauld
Kilsyth
Campsie Fells
Kilpatrick Hills
Renfrew
Barrhead
Rothesay
Port Bannatyne
Kyles of Bute
Kilbrannan Sound
Loch Fyne
Loch Awe
Loch Tay
Loch Lomond
Loch Katrine
Loch Earn
Loch Voil
Loch Doine
Loch Lubnaig
Loch Rannoch
Loch Tummel
Loch Garry
Loch Ericht
Loch Laggan
Loch Lochy
Loch Arkaig
Loch Eil
Loch Linnhe
Loch Leven
Loch Etive
Loch Creran
Loch Awe
Loch Fyne
Loch Long
Loch Goil
Loch Striven
Loch Ryan
Stranraer
Portpatrick
Wigtown
Wigtown Bay
Luce Bay
Kirkcudbright
Kirkcudbright B.
Solway Firth
Borrow Head
Mull of Galloway
Port Logan
Glenluce
Newton Stewart
Gatehouse
Castle Douglas
Dalbeattie
Dumfries
Lochmaben
Annan
Moffat
Lockerbie
Langholm
Hawick
Jedburgh
Kelso
Selkirk
Galashiels
Peebles
Carlisle
Gretna
Longtown
Brampton
Penrith
Appleby
Heathem
Cheviot
Hills
Solway Moss
Derwent
Workington
Whitehaven
Cockermouth
Keswick
Ullswater
Windermere
Kendal
Lancaster
Morecambe
Barrow
Ulverston
Grange
Coniston
Ambleside
Grasmere
Rydal
Derwentwater
Skiddaw
Helvellyn
Scafell
Great Gable
Pillar
Langdale Pikes
Bowfell
Crinkle Crags
Esk Pike
Harter Fell
Kentmere Pike
Shap Fell
Shap
Tebay
Kirkby Stephen
Brough
Appleby
Penrith
Keswick
Borrowdale
Buttermere
Crummock Water
Ennerdale Water
Wast Water
Derwent Water
Bassenthwaite Lake
Thirlmere
Ullswater
Haweswater
Windermere
Coniston Water
Esthwaite Water
Grasmere
Rydal Water
Loughrigg Tarn
Elterwater
Langdale
Great Langdale
Little Langdale
Wrynose Pass
Hardknott Pass
Duddon Valley
Eskdale
Ravenglass
Muncaster Fell
Black Combe
Whitbarrow Scar
Lyth Valley
Kent Estuary
Morecambe Bay
Furness Fells
Coniston Old Man
Wetherlam
Swirl How
Crinkle Crags
Bowfell
Esk Pike
Great End
Scafell Pike
Scafell
Great Gable
Kirk Fell
Pillar
Red Pike
High Stile
High Crag
Haystacks
Grasmoor
Whiteside
Hopegill Head
Eel Crag
Sail
Causey Pike
Catbells
Maiden Moor
Dale Head
Robinson
Hindscarth
Newlands Hause
Grisedale Pike
Skiddaw
Skiddaw Little Man
Blencathra
Saddleback
Carrock Fell
Great Calva
Knott
Binsey
Bassenthwaite
Derwent Water
Borrowdale
Buttermere
Crummock Water
Ennerdale Water
Wast Water
Thirlmere
Ullswater
Haweswater
Windermere
Coniston Water
Esthwaite Water
Grasmere
Rydal Water
Loughrigg Tarn
Elterwater
Langdale
Great Langdale
Little Langdale
Wrynose Pass
Hardknott Pass
Duddon Valley
Eskdale
Ravenglass
Muncaster Fell
Black Combe
Whitbarrow Scar
Lyth Valley
Kent Estuary
Morecambe Bay
Furness Fells
Coniston Old Man
Wetherlam
Swirl How
Crinkle Crags
Bowfell
Esk Pike
Great End
Scafell Pike
Scafell
Great Gable
Kirk Fell
Pillar
Red Pike
High Stile
High Crag
Haystacks
Grasmoor
Whiteside
Hopegill Head
Eel Crag
Sail
Causey Pike
Catbells
Maiden Moor
Dale Head
Robinson
Hindscarth
Newlands Hause
Grisedale Pike
Skiddaw
Skiddaw Little Man
Blencathra
Saddleback
Carrock Fell
Great Calva
Knott
Binsey
Bassenthwaite
NOTE TO COLOURING
2000 Feet.
1000 "
600 "
SEA LEVEL
Longitude West of Greenwich
7
6
5
4
3
2
56
55
Secant Conic Projection
John Bartholomew & Son, Ltd., Edin.

of the west coast of the Highlands is the number of long sea-lochs that run far into the land. Their sides are often steep or even precipitous, they do not widen gradually from head to mouth, their floors are hollowed out into long, deep basins, and at their mouths there is generally a comparatively shallow bar. Since they possess these features they are called **fiords**. They were originally river-valleys which, by the sinking of the land (or possibly by the rising of the sea), have been submerged. They are therefore sometimes called "drowned river-valleys." The basins in them were probably excavated by the glaciers that once occupied all the valleys of Scotland. Fig. 13 shows a typical Highland fiord.

FIG. 13.—Upper Loch Fyne. A typical fiord. (The shaded parts are deep basins.)

Compare the two sides of the Firth of Clyde, the north-west shore of which is in the Highlands, while the east shore is in the Lowlands. Notice that the fiords only occur on one side. The finest of the Clyde fiords are Loch Long and Loch Fyne. Because of the way in which the west coast is cut by fiords, there is no railway line along it, such as we find on the east coast. The West Highland line keeps just far enough inland to avoid all the sea-lochs.

On the Firth of Clyde, **Rothesay** in the Island of Bute and **Dunoon** are busy summer resorts in the midst of beautiful scenery. **Campbeltown** has whisky distilleries, and is the headquarters of a large fleet of herring-boats. Whisky is made also in **Islay** and other parts of the Highlands. The shores of the beautiful island of **Arran** are dotted with little watering-places that are crowded with visitors in summer.

The eastern coastal plain of the Highlands is much broader than the western, and therefore supports a much larger population. The

plain of **Buchan** in north-east Aberdeen and the **Moray Plain** south of the Moray Firth, are fertile districts where **cattle-rearing** is important. **Aberdeen** is the largest town. It is situated near the mouths both of the Dee and the Don, and where the Highlands come close to the sea, forcing all traffic along the coast to pass near Aberdeen. A large area of granite practically touches the sea at Aberdeen, so that an important industry of the town is the quarrying and exporting of this stone. It is the centre of the east coast **fishing** trade. Farther north is **Peterhead**, also engaged in granite-quarrying and fishing.

Inverness was formerly of great military importance, because of its situation at the end of Glen More, commanding the plains along both sides of the Moray Firth. If the population of the Highlands were not so small, Inverness would certainly be a large and important town, because of its situation at the crossing of such easy routes through a difficult country. The sparseness of the population also diminishes the importance of the **Caledonian Canal**, which cuts through the low ground between the lakes of Glen More, and allows vessels of moderate size to pass from one side of Scotland to the other. On a stream running into Loch Ness are the **Falls of Foyers**, which supply the power to make electricity, which is used for smelting **aluminium** in electric furnaces. The south-west end of Glen More is submerged, and is called **Loch Linnhe**. At the mouth of the loch is **Oban**, a busy watering-place in summer, and a centre of steamboat routes to and from all parts of the West Highlands. It can be reached from the Lowlands by the Callander and Oban line, a branch of the Caledonian Railway. One of the branches of Loch Linnhe is **Loch Leven**, at the head of which is **Kinlochleven**, where electric plant has also been erected for smelting aluminium. The power is obtained by an artificial fall.

NORTH-WEST HIGHLANDS. The Highlands north-west of Glen More are similar in structure to the Grampian Highlands. They from a plateau much dissected in the west, and sloping to a fairly broad coastal plain in the east. A great many of the mountains are between 3000 and 4000 feet in height.

Much of the lake, mountain, and valley scenery is extremely beautiful, but is too inaccessible to be well known. The north-west Highlands are completely crossed by a railway line running from **Dingwall** to the Kyle of Loch Alsh.

The **Outer Hebrides**, or Long Island, are similar in structure to the north-west Highlands, and are separated from them by the sunken valley of the **Minch**. They are low and barren, with a mild, wet climate. A special kind of tweed is made by hand in some parts. **Stornoway**, in Lewis, is an important **fishing**-town. Many of the **Inner Hebrides**, such as Skye, Mull, and Staffa, are composed largely of volcanic rocks. **Portree**, on the east coast of Skye, is a **fishing** centre. The island of Staffa is noted for **Fingal's Cave**. The volcanic rocks of the cave in cooling have formed a series of beautiful and regular columns that give the effect of human architecture.

THE NORTH-EASTERN LOWLANDS. Caithness and the strip of low ground bordering the Moray Firth, should not be included in the Highlands. The rocks, and therefore the scenery, are of quite a different character. While in many parts of the Highlands, Gaelic is still the only language spoken, it is not spoken in the North-east Lowlands. The **Scandinavian** influence has always been strong there, as may be seen from many of the place-names. A certain amount of agriculture is carried on, but **fishing** is the most important industry. The chief fishing-ports are **Wick** and **Thurso**, which are both connected by rail with the south. The rocks of the district split up easily into large flat slabs, which are therefore used all over the country as **paving-stones.**

Caithness is separated from the **Orkney Islands** by the stormy waters of the **Pentland Firth.** Through this dangerous channel the tides race at a speed that sometimes brings even steamers to a standstill. In winter it is one of the most tempestuous parts of the British coast. In the Orkneys, **fishing** is the chief industry, the most important centre being **Kirkwall.** In the **Shetland Islands,** farther north, of which the chief town is **Lerwick, fishing** is again the commonest occupation. Fine shawls are knitted, and the islands are noted for a tiny but hardy pony with a shaggy coat.

IRELAND.

DIMENSIONS AND RELIEF. Find by measurement the length of Ireland from Malin Head to Cape Clear. Find its width from Sligo to Dundalk, and from Dublin to Slyne Head. Look at the map on p. 53, and notice the distribution of the highlands and the lowlands. The highlands do not occur in such large masses as they do in Scotland, and they are on the whole arranged near the coast, leaving a wide plain in the centre of the country.

SOUTHERN IRELAND. The south-west highlands are known collectively as the **Kerry Mountains**, the highest parts of which are **Macgillicuddy's Reeks**, rising to nearly 3500 feet. In this district are the beautiful **Lakes of Killarney**, much frequented by tourists. It is the continuation of these ranges out to sea that forms the numerous peninsulas of south-west Ireland, separated by bays, such as **Dingle Bay**, **Kenmare Bay**, and **Bantry Bay**. From **Valentia Island** there starts one of the most important of the transatlantic cables.

The east ranges are continued as the **Knockmeledown Mountains**. A branch to the north-east reaches far into the interior as the **Slieve Bloom Mountains**. The rivers of southern Ireland nearly all run east for long distances in valleys parallel to the hill ranges. They then turn at right angles, and their lower courses or estuaries open to the south. The most important rivers are the **Lee** and the **Suir**, at the mouth of which are **Cork** (the third city of Ireland) and **Waterford**. The south of Ireland is engaged largely in agriculture, particularly in dairy-farming and cattle-rearing, and therefore we find that the chief exports of these towns are **cattle**, **bacon**, **butter**, and **eggs**. On an island in Cork Harbour is **Queenstown**, a port of call for Atlantic liners. The mails are sent by rail to Kingstown, on Dublin Bay, where they are again put on board ship for Holyhead, and then carried by express trains to London.

Bartholomew, Edinr. delt.

FIG. 14.—Ireland.

EASTERN IRELAND. There are three important highland masses in the east of Ireland, all near the coast. The **Wicklow Mountains** in the south-east reach a height of 3000 feet above sea-level The district, which includes the celebrated Vale of Ovoca, is famous for its beautiful scenery. In the north-east, the **Mourne Mountains**, composed of granite, do not reach 3000 feet. Farther north is the **Antrim Plateau**, a high tableland formed from part of a great sheet of volcanic rock that fronts the sea in lofty cliffs. At the **Giant's Causeway**, near Portrush, the basalt shows beautiful columns like those of Fingal's Cave, but extending over a much larger area.

From the Wicklow Mountains the rivers **Slaney** and **Bann** flow south into Wexford Harbour. **Wexford** has a small shipping trade, and exports agricultural produce. Its harbour is Rosslare, whence steamers sail to Fishguard. Between Wexford and Dublin, the towns on the coast are mainly watering-places. Those most popular with visitors are **Wicklow** and **Bray**, both of which are reached from Dublin by rail.

Dublin, at the mouth of the **Liffey**, is the second largest town in Ireland, and is the capital of the Irish Free State. It has a favourable position, being centrally situated on the east coast, the busiest part of Ireland. In England the Midland Gate, the broadest and easiest passage from east to west, opens to the Irish Sea due east of Dublin Bay. The bay on which it stands is the best harbour in the neighbourhood, and from Dublin communication is easy with every part of Ireland. A glance at the railways shown in the map on p. 53 shows how the railway lines radiate out to all parts from Dublin. It is the seat of government, and contains two universities. Irish time is now the same as Greenwich time. Its most important industries are **distilling** and **brewing**, the manufacture of **mineral-waters**, and the making of Irish **poplins**. For fast passenger and mail traffic the port of **Kingstown** is used, a fine harbour six miles down Dublin Bay.

Between Dublin and Belfast is **Drogheda**, a little seaport at the mouth of the Boyne. **Belfast** is situated at the mouth of the Lagan, and is the capital of Northern Ireland. It is the first town in Ireland for size, and is the chief manufacturing centre. The **linen** industry is the most important. The flax grown in the neighbourhood is insufficient to supply the demand, so that large quantities are imported from Russia and other places. Irish linen is unsurpassed for whiteness, so that linen manufactured on the Continent is often sent to Belfast to be bleached. Belfast is a very important **shipbuilding** town. It imports its coal and iron from Ayrshire.

The fact just mentioned, that coal and iron have to be imported into Ireland, is the chief cause of the absence of large industrial communities, such as we find in England and Scotland. There is no important coal-field in Ireland. **Iron-ore** is found among the volcanic rocks of Antrim. It is not smelted in Ireland, but is exported to Ayrshire. **Aluminium-ore** is also obtained from the same localities, and is sent to the works at Foyers and Kinlochleven in Scotland.

NORTHERN IRELAND. The most important highlands in the north are the **Donegal Mountains**, which are noted for their wild and picturesque scenery. **Sheep** are grazed on the hill-slopes, and, just as in the Hebrides or the Shetlands, the wool is made up by the peasants into home-spun cloth. The coast is bold and rocky, and is indented with long arms of the sea, the longest of which is **Lough Swilly**. The River Bann flows from the Mourne Mountains into Lough Neagh, and then into the mouth of Lough Foyle. **Lough Neagh** is the largest lake in Britain, and has been formed by the subsidence of the volcanic rocks of Antrim. At the mouth of the Bann is **Coleraine**, with whisky distilleries and salmon fisheries. Not far from it is **Portrush**, in summer one of the busiest watering-places in Ireland. Portrush is the best centre for visiting the Giant's Causeway and the fine cliff scenery of the district. Off the north coast is **Rathlin Island**, where Robert the Bruce took shelter for a time. At the head of Lough Foyle is **London-**

derry, with important **linen** manufactures, particularly shirt-making. It exports agricultural produce. **Moville**, on Lough Foyle, is a port of call for steamers going to Canada by the north of Ireland.

WESTERN IRELAND. In the west there are three main groups of mountains—the **Sligo Mountains** in Sligo, the **Nephin Beg Mountains** in Mayo, and the **Connemara Mountains** between Clew Bay and Galway Bay. **Achill Island**, with its magnificent sea-cliffs, is merely a continuation of the Nephin Beg Mountains.

The west coast of Ireland is thinly populated. There is no town to compare in size with the busy ports of the east coast. There are many fine harbours on the west coast, but the poverty in natural resources of this part of Ireland prevents the harbours from being properly utilised. All along the coast **fishing** is the chief occupation. **Sligo**, on Sligo Bay, and **Galway**, on Galway Bay, are the headquarters of this industry. At the mouth of the Shannon is **Limerick**, near a rich, pastoral district. It has, therefore, a brisk trade in **bacon** and **dairy produce**. It ranks after Cork as the fourth port in Ireland. It has also **leather** manufactures, using for this purpose both Irish and imported hides.

CENTRAL IRELAND. Most of the centre of Ireland is a flat, monotonous country, known as the **Central Plain**. Stretches of green meadow-land, alternating with lakes and brown peat-bogs, extend for many miles. From Dublin on the east coast, to Galway on the west, a distance of over 100 miles, there is not a single hill of any importance. The underlying rocks of the plain are limestone, which easily weathers away into shallow hollows, thus giving rise to the numerous lakes found along the courses of many of the rivers. The **Shannon** is the most important river of the Central Plain, and is the longest in the country. In its course it expands and forms a number of lakes, the largest being **Lough Allen, Lough Ree**, and **Lough Derg**. Between the Shannon and the Boyne stretches the largest area of bogland in Ireland, the **Bog of Allen**. The dried peat is used for fuel, just as it is in the Scottish Highlands, though in Ireland its use is much more general.

COMMUNICATIONS. Since the interior of Ireland is flat, and since the highlands round the coast generally offer fairly easy passages through them, the railways of Ireland are not controlled by the relief to the extent that they are in parts of Scotland and England, yet good examples of this control may be found, even in Ireland. The railways radiate out from Dublin as a centre.

The **Great Northern Railway** runs from Dublin through Drogheda to Dundalk. It then keeps inland in order to avoid the Mourne Mountains, and runs down the Lagan valley to Belfast. From Belfast the **Belfast and Northern Counties Railway** is forced inland by the high Antrim Plateau. It reaches the sea at Coleraine, and runs along the coast to Londonderry. The **Midland Great Western Railway** goes west from Dublin across the Central Plain, through Athlone, at the foot of Lough Ree, to Galway. The **Great Southern and Western** runs inland from Dublin, in order to take advantage of a broad band of low ground lying to the south-east of the Slieve Bloom Mountains and their continuations. At Maryborough a branch runs down the Nore valley through Kilkenny, and then to Waterford. The main line keeps to the south-west until it approaches the east and west ranges of southern Ireland. It crosses the northern range by a broad and easy gap, and then crosses the main range by a deep gap just south of Mallow. It then swings a little to the east, in order to reach Cork. The **Dublin and South Eastern** runs along the coast to Wicklow. Turning inland to the Vale of Ovoca, it serves the tourist traffic of the Wicklow Mountains. The line then goes down the Slaney valley to Wexford and Rosslare.

Ireland can never hope to become a busy industrial country. Its poverty in coal and other minerals places it at a great disadvantage in this respect. But there is no reason why it should not develop still further its natural resources as a rich agricultural and grazing country.

Some Statistics of the United Kingdom.

[Do not try to learn any of these figures. Note the *order* in which things come. Represent the figures by diagrams.]

Imports, 1924.	Million £.	Exports, 1924.	Million £.
Food—			
Meat and animals	129	Cotton goods and yarn	199
Grain and flour	120	Iron, steel, and other metal goods	75
Butter, cheese, and eggs	82	Coal	72
Raw cotton	122	Woollen goods	68
Raw wool	75	Machinery	45
Oil seeds, nuts, fats, etc.	52	Chemicals	26
Wood and Timber	51	Total of these and all other exports	801
Ores	24		
Total of these and all other imports	1,277		

Population in 1921.—England, 35·6 millions; Scotland, 4·9 millions; Ireland, 4·4 millions; Wales, 2·2 millions; Isle of Man and Channel Islands, 0·15 million; total, 47·25 millions.

Area of United Kingdom.—94,500 square miles; of Irish Free State, 26,600 square miles.

SCANDINAVIA.

RELIEF. In many respects Scandinavia is very like the Highlands of Scotland. It consists in the main of a great **dissected plateau**, highest in the west and in the north. The watershed is close to the west coast, so that the rivers flowing to the west are short, rushing torrents. The most striking feature of the west coast of Scandinavia is the great number of narrow and deep **fiords**, with precipitous sides, which penetrate into the interior, sometimes for nearly a hundred miles. Among the largest of these are **Hardanger Fiord, Sogne Fiord,** and **Trondhjem Fiord.**

From the map between pages 8 and 9, notice how the **Norwegian Deep** runs round the south of Norway towards Christiania Fiord. This depression is continued inland along the valley of the **Glommen** and the basin of **Lake Miosen.** It is utilised by a railway running from

Oslo (Christiania), past the side of the lake, and along the Glommen to Trondhjem. Another important line runs right across the tableland to the low ground on the east, and then turns south to Stockholm.

Off the coast, the innumerable islands form a protecting "Skerry wall." Of the larger groups, the **Lofoden Islands** are the most important on the Atlantic side. **Gottland** and **Öland** are islands in the Baltic Sea. From the mountains of the plateau great glaciers creep down the valleys, and the streams from the snow-fields tumble over the steep sides of the fiords in countless waterfalls. Scandinavia is characterised by the number and beauty of its lakes. **Lake Vener** (which ranks third in Europe for size), **Lake Vetter**, and **Lake Mälar** occupy a depression stretching right across southern Sweden. These lakes are much used as means of communication, and are united to each other and to the sea by canals.

CLIMATE. Scandinavia extends for a long distance in latitude, so that there must be great differences in the climates of the north and the south. The west coast, which obtains the full benefit of the genial, moist, south-west winds, and the warm Atlantic Drift, is much **milder** and **rainier** than that of the east. The harbours along the west coast are open all the year, while in the Gulf of Bothnia the harbours are sometimes frozen for six months in the year. In winter most of the interior of Scandinavia is covered with snow, and the inhabitants then use snowshoes of wood several feet long, which are called ski (pronounced *shee*).

NORWAY.

PRODUCTIONS. All along the west coast of Norway, communication by land is almost impossible. Boats must be used, and the Norwegians are therefore great sailors. A large proportion of the inhabitants along the coast are **fishermen**, the cod and the herring fisheries being the most important. Many of the men are engaged in whale and seal fisheries. Much of the land is thickly forested with pine and fir, so that great quantities of **timber** are exported. The wood is also made into **wood-pulp** and exported for paper-

FIG. 15.—Scandinavia and Denmark.

making. There are rich mines of silver, iron, and copper, but coal is scanty. Its place is supplied by water-power from the waterfalls, used for generating electricity.

TOWNS. The capital is **Oslo** (Christiania), on Christiania Fiord, a large commercial centre and a busy seaport. The second largest town is **Bergen**, on the west coast. It is the centre of the **fishing** industry, and exports large quantities of cured fish. The town next in size is **Trondhjem**, on Trondhjem Fiord, and the northern terminus of the railways. In its fine old cathedral the kings of Norway are crowned. In the north, **Hammerfest** is the centre for tourists, who come to see the "midnight sun." On a branch of Christiania Fiord is **Drammen**, a busy seaport engaged largely in exporting **timber**. Notice that all the important towns of Norway are situated on the coast.

SWEDEN.

PRODUCTIONS. Sweden is largely an **agricultural** country, and in the south the rearing of live stock is important. As in Norway, the forests are a source of great wealth to the country. **Wood** and **wood-pulp** are exported, and the abundance of timber, combined with water-power from the streams, enables Sweden to excel in match-making.

The country is very rich in minerals, particularly **iron-ore**. **Dannemora**, north of Uppsala, is a famous iron centre, while in the extreme north, in Swedish Lapland, there are immense deposits of iron-ore. The most northerly railway in the world runs from this iron district to the west coast, in order to reach a port free from ice all the year round. Most of its course is within the Arctic Circle. The iron-ore of Sweden is smelted with charcoal instead of coal, and the resulting iron is probably the finest in the world. There are **copper** mines at Falun. The chief exports from Sweden are, in order of importance, **wood** and **wood-pulp**, **iron-ore** and **iron goods**, and **butter**.

TOWNS. The capital of Sweden is **Stockholm**, at the outlet of

Lake Mälar. It is a beautiful town, with educational and scientific institutions of the first rank. It is the chief manufacturing centre. North of Stockholm is the old town of **Uppsala**, with an ancient cathedral and a famous university. The second largest town in Sweden is **Göteborg** (Gothenburg), a large seaport that ships great quantities of timber. On the coast of the Sound is **Malmö**, another busy seaport. The most important industrial and manufacturing town of Sweden is **Norköping**. The chief naval station is **Carlskrona**, on the shores of the **Baltic Sea**.

FINLAND.

In 1917 Finland became an independent country. It stretches from the Arctic Ocean to the Gulf of Finland. The north is a tundra region inhabited by fishermen, fur-hunters, and wandering tribes of reindeer-breeders. Farther south there are dense coniferous forests which form the chief wealth of the country. Finland has been called the "country of the thousand lakes." The whole region is a labyrinth of lakes, marshes, and hills. The capital of the country is **Helsinki** (**Helsingfors**), on the Gulf of Finland, a well-built modern town. Timber and wood pulp are exported. The Finns are a well-educated and progressive people.

THE BALTIC REPUBLICS.

ESTONIA, LATVIA, LITHUANIA.

The new states of Estonia, Latvia (or Lettonia), and Lithuania border the Baltic Sea from the Gulf of Finland almost to the mouth of the River Niemen. All these countries form part of the European Plain, and are similar in climate and productions. The region is well forested, and **lumbering** is one of the chief industries. The principal grains are **oats** and **rye**, **potatoes** are largely grown and large quantities of **flax** and **hemp** are produced. **Riga**, a town containing over half a million inhabitants, is the chief seaport of the region. It is the capital of Latvia, and exports wood, oats, flax, and hemp, all typical "Baltic products."

DENMARK

Denmark consists of part of the mainland of Europe (the peninsula of **Jutland**), and several islands, the chief of which are **Zealand**, **Fünen**, and **Laaland**. Bornholm, farther east, also belongs to Denmark. Jutland is separated from Norway by the **Skagerrak**, and from Sweden by the **Kattegat**. The islands of Fünen and Zealand, at the mouth of the Baltic Sea, form three channels, the shallow **Little Belt**, the broader and deeper **Great Belt**, and the **Sound**, the shortest route to the Baltic.

RELIEF. No part of Denmark reaches 600 feet above sea-level. Jutland is a part of the great European plain. The western shores of Jutland are low and sandy, with long spits of sand almost shutting off shallow lagoons. The end of the peninsula, the **Skaw**, is a long, narrow sandspit. On the east coast there are inlets that form fairly good harbours for small vessels. The channel cutting Jutland in two is called the **Liim Fiord**, but in structure and appearance it is quite unlike the fiords of Norway.

CLIMATE AND PRODUCTIONS. Most of Denmark is in the same latitude as Scotland, and the climate resembles that of eastern Scotland, but, as Denmark is farther east, the summers are rather warmer, and the winters colder. The western half of Jutland is barren moorland, but the eastern part and the islands contain good arable land, with wide stretches of pasture and meadow. Denmark is devoted chiefly to agriculture, and particularly to **dairy-farming**, the most important product being **butter**. **Bacon**, **eggs**, and **hides** are the only other exports of importance. The making of **gloves** is an important industry. There are no deposits of coal or metals of any value.

TOWNS. The only large town in Denmark is **Copenhagen**, on the island of Zealand. It is situated on a fine harbour protected by an island, and lies on the shortest route from the Baltic to the North Sea. The population, including suburbs, is over half a million. The largest town in Jutland is **Aarhuus**, about one-tenth the size of Copenhagen.

The fact that different parts of the country are separated by straits makes rapid communication difficult. The difficulty is surmounted by running the trains on to large ferry-boats which ply between the mainland and the islands.

ICELAND. Iceland is an independent country with the same king as Denmark. It is an island larger than Ireland, and with mountains over 6000 feet high. Glaciers creep down the valley from the snow-fields of the interior. There are several active volcanoes, of which **Hekla** is the best known. Geysers and hot-springs are common throughout the island, and earthquakes sometimes do much damage. The chief occupations are sheep-rearing, fishing, and the collecting of eggs and eider-down. The capital is **Reykjavik**, a little seaport containing about fifteen thousand inhabitants, and built largely of wood and corrugated iron.

Midway between Shetland and Iceland are the **Faeroes**, a score of small, volcanic islands, the inhabitants of which follow the same occupations as the Icelanders.

HOLLAND, or THE NETHERLANDS.

RELIEF. Holland (from *Houtland*, that is *Woodland*) is part of the European plain, and is the most low-lying country in Europe. More than one-third of the whole country is below sea-level. Along the coast stretches a line of sand-dunes which are strengthened in places by "dykes" or embankments. Roads and canals run along their summits. In the thirteenth century this protection was broken through and the sea rushed in, forming the large inlets, the **Zuider Zee** and the **Dollart**. Look at the map of Holland (p. 81), and you will see the old barrier of sand-dunes in the line of islands fringing the coast between these two bays. The Dutch are engaged in a continual battle with the sea, and have reclaimed from it much of the land they formerly lost. Stretches of reclaimed land are called **polders**. The land is kept dry by windmills and steam-engines, that pump the water into canals, which serve the double purpose of draining the country and providing means of communication.

CLIMATE AND PRODUCTION. The climate of Holland is not unlike that of eastern England, but a little more extreme. The rainfall is about the same as that of the east of Britain. A considerable part of Holland consists of bogland and moorland, but many of the other districts are exceptionally fertile. Thus **dairy-farming** and horse and cattle rearing are important occupations in Holland. **Flower-growing** is a characteristic Dutch industry. Wheat, rye, oats, potatoes, and sugar-beets are also cultivated. There is no mineral wealth of any importance. Manufactures are hampered by the lack of coal. The making of **butter, margarine, condensed-milk**, and **cheese** is important; **textile industries** (cotton, linen, wool) are carried on, and **sugar** and **spirits** are manufactured. Along the coast the **fisheries** are valuable.

COMMUNICATIONS AND TOWNS. Many of the mouths of the rivers are not deep enough for ocean-going ships, owing to continual silting-up. The Rhine splits up into "distributaries" soon after entering Holland. The most important are the **Lek** and the **Waal**, the latter of which takes two-thirds of the total volume of the Rhine. The Waal also receives the river **Maas** from Belgium and France. Farther south, the west estuary of the **Schelde**, the only one used for navigation, can only be kept open by constant care and attention.

Holland is in a very favourable position for trade. It lies just opposite the estuary of the Thames. The great volume of commerce that streams up and down the Rhine must pass through Holland. Owing to its valuable possessions in the East Indies and other parts of the world, the foreign trade of Holland is very large.

The largest town is **Amsterdam**, with a population of over half a million. The large ships of modern times had difficulty in navigating the shallow Zuider Zee, and the North Holland Canal, completed in 1825, proved insufficient. In 1876 direct communication was opened west by the North Sea Canal, giving a depth of 26 feet. Since then the port has been further improved and has grown rapidly. The chief trade is in Dutch colonial produce. It is the most important **diamond-cutting** town in Europe.

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Rotterdam, on the Lek, is the second largest town in Holland. Most of the German trade up the Rhine passes through the town or near it. The **Hague** is the capital of Holland, and the seat of government. It is situated on dry ground, and is therefore the favourite **residential town** of the country, and the centre of the chief artistic industries. **Utrecht**, on rising ground in the centre of the country, is situated at the crossing of routes from north to south, and from east to west. It is now an important railway junction.

In the north-east of Holland, **Groningen** is the most important town. It is a market for agricultural products. **Haarlem**, west of Amsterdam, is the centre of a district engaged in growing **flower-bulbs**. **Leyden** was once of much greater importance than it is now. Its university, however, is still famous, and it has **textile** manufactures. Of the other towns, **Delft** makes fine **pottery**, and is a market for butter and cheese. **Schiedam** is a small seaport and distils **gin** (Hollands). **Flushing**, on Walcheren Island, is a rising port for passengers and mails, and connects England with Holland and North Germany. For passenger and mail traffic, the most important packet-station is the **Hook of Holland**, which is connected by fast steamers with Harwich.

BELGIUM.

The coast-line of Belgium is only forty miles long, and the sea bordering it is shallow a long way out from shore. The coast is separated from the interior plain by a line of sand-dunes. In the south-east the land rises into the picturesque plateau of the **Ardennes**, in parts over 2000 feet in height.

PRODUCTIONS. Unlike Holland, Belgium is rich in minerals. The most important mineral is **coal**. A narrow coal-field extends from west to east across the country, past Namur and Liège. **Iron** is found near the coal-field, and also in the south-east, round Luxembourg. **Zinc** is another valuable mineral, but the mines are being rapidly exhausted. It is the presence of these minerals that accounts for the dense population and the important manufactures of

Belgium. Agriculture is also largely carried on, the chief crops being **wheat**, **rye**, **oats**, and **potatoes**. **Flax** is grown in the basin of the Lys, a tributary of the Schelde, and **sugar-beets** are also cultivated.

COMMUNICATIONS AND TOWNS. The principal rivers are the **Meuse** and the **Schelde**. The former has been made navigable to Visé, near the German frontier, and the latter as far as Ghent. The **Lys**, which joins the Schelde at Ghent, has also been made navigable, but the Senne, on which Brussels stands, is useless for large boats. The country is intersected by numerous canals, which serve both for communication and for draining the low-lying parts. The railway system is exceptionally good.

The capital of Belgium is **Brussels**, situated on the Senne. If we include the suburbs, the population is over half a million. The chief advantage of Brussels lies in its **central position**. From it railways radiate out to all parts of Belgium. Brussels has a university, and several famous art-galleries. It is a recognised centre of literature, art, and science. The principal manufacture is the making of **lace**. South of Brussels is the battlefield of Waterloo.

After Brussels, the most important town is **Antwerp**, on the Schelde, one of the great ports of the Continent. Many fine inland waterways bring goods to Antwerp from several parts of Belgium. The town has important manufactures, including **shipbuilding**, **sugar-refining**, and **lace-making**. The port has an enormous trade in **rubber**.

Higher up the Schelde, at its junction with the Lys, is **Ghent**, built on a number of islands. The town is now a seaport, for a ship canal joins it to the estuary of the Schelde. It is the centre of the **cotton** industry in Belgium, although it has long lost its former proud position of the most important manufacturing town in Europe. Between Ghent and the sea is **Bruges**. Its fine old buildings make it one of the most interesting towns in Europe. It has trade in linen and lace. **Ostend**, on the coast, is a busy **packet-station**. Fast steamers carry passengers and mails daily between the town and Dover. In summer it is a fashionable **watering-place**.

Several great manufacturing towns occur near the coal-fields. Of these the largest is **Liège**, the first town on the Continent to work its coal-mines. In the town and in the densely peopled district round it, **coal-mining** and **iron-manufacturing** are the chief branches of industry. Liège is one of the greatest centres in the world for the making of **fire-arms**. Other towns engaged in coal and iron working are **Mons** and **Namur**. In the towns of this district, also, there are important manufactures of **glass**.

The eastern frontier of Belgium has been altered since the Great War. The Moresnet district, formerly neutral territory, for both Belgium and Germany claimed it, has been given to Belgium. Other two small areas (Eupen and Malmedy) have been ceded to Belgium by the Treaty of Versailles.

LUXEMBOURG.

The Grand Duchy of Luxembourg is a little independent state wedged in between Belgium, Germany, and France. Although the country does not anywhere reach 2000 feet above sea-level, yet the surface is rugged, the river-valleys are deep and narrow, and the scenery is picturesque. In the south there are rich deposits of **iron-ore**, large quantities of which are sent to the works of western Germany. The capital is Luxembourg, a town of 20,000 inhabitants.

FRANCE.

RELIEF. Most of the north, west, and south-west of France consists of a broad **plain**. Towards the east and south-east, the land gradually rises into a high tableland, the **Central Plateau** of France, which reaches its highest part towards the south-east. On the east side the plateau suddenly ends, and its edge forms a great wall facing the Rhone valley and the Mediterranean Sea. This wall, worn and broken by the weather into peaks and valleys, is called the **Cevennes Mountains**. It is therefore not a true mountain-range at all, but an escarpment. Farther north the edge of the escarp-

ment is called the **Côte d'Or.** In the middle of the granite plateau occur a number of volcanic cones, known as the **Auvergne Mountains.** The summits of these extinct volcanoes reach nearly 6000 feet above sea-level, and the cones and craters are as perfect as if the volcanoes were still active.

North of the Saône, the plateau structure appears again in the **Vosges,** once continuous with the plateau of the Black Forest, but now broken through by the Rhine valley. In the north, the low plateau of the **Ardennes** crosses into Belgium and Germany. In Brittany, and partly in Normandy, are the **Armorican Highlands.**

In addition to these highlands, that have the structure of dissected plateaus, there are true **folded mountain-ranges** in France. These are the **Western Alps,** culminating in **Mont Blanc,** nearly 16,000 feet high; the parallel ridges and valleys of the **Jura Mountains,** in parts over 5000 feet above sea-level; and the huge ranges of the **Pyrenees** with a continuous elevation of six to ten thousand feet.

ROUTES AND RAILWAYS. The girdle of highlands in the east and south does not everywhere render communication impossible. Look at the map on p. 71, and you will see that from the **Gulf of Lions** an easy route runs west towards Toulouse and the Garonne valley. This is one of the most important routes from the Mediterranean to the northern plains, and, from the name of an old historic town in the valley, is called the **Gate of Carcassonne.** Still more important is the deep depression formed by the **Rhone** and its tributary the **Saône.** From the Saône a river valley, that of the **Doubs,** points towards the Rhine, and the watershed is crossed by a low pass, called sometimes the **Gate of Burgundy,** and sometimes from the town at this point, the **Gap of Belfort.** Between the Vosges and the Ardennes, there is another easy passage from France to Germany, by Lorraine. As the map on p. 71 shows, most of the railway lines of France radiate from Paris. Paris has express communication with practically every capital in Europe. All the easy routes mentioned in the last paragraph are utilised by railway lines as well as by canals and roads.

CLIMATE AND PRODUCTIONS. North and west of the Central Plateau the climate is similar to that of the British Isles, except that as a rule it is warmer in summer, and colder in winter. The rainfall is fairly evenly distributed throughout the year. Round the Mediterranean, and for some way up the Rhone valley, however, the summers are brilliantly sunny and almost rainless. Rain falls chiefly in winter. Here, in addition to the **vine**, are grown the **mulberry-tree**, the **olive**, and the **orange**, all typical plants of the Mediterranean lands. France is the greatest vine-growing country in Europe.

Large areas in France are devoted to **wheat**, for the French eat much white bread. In good years France does not need to import wheat; which cannot be said about any other country in western Europe. In the north, **beetroot** is grown for the manufacture of sugar. The **orchards** of Normandy are famous, and therefore cider is drunk in this district more than wine.

France is comparatively poor in minerals. The chief **coal-field** is a continuation of that which crosses Belgium. Sixty per cent. of the total production of coal in France is obtained from this district. Coal occurs also near St Etienne, and near Creuzot. By the Treaty of Versailles in 1919 the rich **Saar coal-field** near Lorraine was ceded by Germany to France for fifteen years. At the end of that time the inhabitants will determine by plebiscite whether they will become part of France or of Germany. The regained province of Lorraine is one of the most productive **iron** districts in Europe. Alsace contains some of the richest **potash** deposits in the world.

NORTHERN FRANCE. The busiest and largest town in the north is **Lille**. It is on the northern coal-field, and is the chief centre of the **linen** industry. In this district and the adjoining parts of Belgium the best flax in Europe is produced. Lille is also an important **engineering** centre. On the coast are the important packet-stations **Calais** and **Boulogne**, the former connected with Dover, the latter with Folkestone. Farther south is **Dieppe**, with lines of steamers crossing in four hours to Newhaven. **Dunkirk** has a fine harbour, and is rapidly rising in importance, owing to its proximity to the manufacturing towns on the coal-field near the French frontier.

Amiens, on the River Somme, has one of the finest cathedrals in Europe. In addition, it is an industrial town, and has **woollen**

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Fig. 16.—France.

manufactures. **Reims** also is a busy woollen-manufacturing town. Here the kings of France used to be crowned.

THE PARIS BASIN. **Paris** is situated in the centre of a rich agricultural region, so that food supplies for Paris are not only easily transported, but very abundant. By many people it is considered the most beautiful city in Europe. The cathedral of **Notre-Dame**, the **Louvre**, with its magnificent art collections, and the old palace of the **Tuileries**, are among the best-known buildings. In the neighbourhood is the huge palace of **Versailles**, erected by Louis XIV. The manufactures of Paris are largely of jewels, fancy goods, gloves, articles of dress, and similar things. The city is also the centre of a great **motor-car** industry. Near Paris, the famous **Sèvres porcelain** is made. The city is one of the most important centres of literature, art, and science in the world. It is the second largest city in Europe, the population being nearly three millions.

The tides come up the Seine as far as **Rouen**, which is therefore a seaport town. Its cathedral is famous, and it is the chief seat of the **cotton** manufactures of France. At the mouth of the Seine is **Havre**, the principal seaport of northern France. From it start the large transatlantic steamers of France, for the town has a great **American trade**. It imports much **coffee**, which in France is far more generally drunk than tea. It has also large **flour-mills**.

NORMANDY AND BRITTANY. The west of France has a heavier rainfall than the interior, so that pasture-land is common, and **butter** is a valuable product. **Orchards** are numerous. Round the coast, **fishing** is important, and the men of Normandy and Brittany make the best sailors in France, and form a large proportion of the French navy. At the end of the Cotentin is **Cherbourg**, and at the extremity of the Breton peninsula is **Brest**, both important naval ports. Most passengers to Brittany disembark at the packet-station of **St Malo**.

THE CENTRAL PLATEAU AND THE LOIRE. The Central Plateau is high and bleak, and the least fertile part of France. On the eastern edge of the plateau is **St Etienne**, the position of which is determined by a coal-field. **Coal-mining** and **iron** and **steel** working are important industries. **Fire-arms** are

manufactured, and there is a branch of the silk trade, the making of **ribbons**. Farther north another coal-field has given importance to **Le Creuzot**, a town with great **iron** and **steel** industries and large **engineering** works, making, among other things, locomotives and motor-cars. In the middle Loire valley, **Orleans** is the centre of a grain-growing district. In history it will always be associated with the Hundred Years' War, and the Maid of Orleans. At the mouth of the Loire are the rival seaports of **Nantes** and **St Nazaire**.

THE SOUTH-WEST. North of the Garonne the vine is grown for the making of **brandy**, or cognac. The town of **Cognac** is the centre of this industry. The basin of the Garonne is one of the chief vine-growing districts, **claret** being made in this locality. The chief seaport is **Bordeaux**, which exports more wine than any other town in France. In size it ranks fourth among the towns of France. The estuary of the Garonne and the Dordogne is called the **Gironde**. Along the coast of the Bay of Biscay, south of the Gironde, the land is low and sandy. This is the district known as the **Landes**, which is now planted with pine forests, from which turpentine is obtained. Near the Spanish frontier is **Biarritz**, a beautiful and fashionable watering-place. In the upper Garonne valley the only large town is **Toulouse**.

THE MEDITERRANEAN COASTS AND THE RHONE VALLEY. Sheltered by highlands from the winds of the north, and sloping towards the Mediterranean and the sun, this district presents marked differences in climate and productions from the other parts of France. The summers are very sunny, and almost rainless. Rain falls chiefly in winter, and the harvest is reaped in early summer. The **vine**, the **olive**, and the **mulberry-tree** (for silk-worms) are the most important products. Orange groves are numerous, and palms are seen in the gardens and along the streets. **Marseilles**, the second largest town in France, is the chief city. Oil-refining and soap-making are important industries. All the outgoing and incoming trade of the rich Rhone valley is focussed at Marseilles. Along the coast eastwards is **Toulon**, a naval

station with large shipbuilding yards. Farther east, stretching across the Italian frontier, is the **Riviera**, or Azure Coast, so called from the brilliant blue of the sky and the deeper blue of the ocean. Sheltered by the Alps from the cold north winds, this coast even in winter has a delightful climate, and in January is brilliant with roses and other flowers. The chief towns are Cannes, Nice, and Mentone, with Monte Carlo in the little independent principality of Monaco. To these towns rich people and invalids come in winter from all parts of Europe. In recent years a large trade has arisen in early flowers, fruit, and vegetables.

Up the Rhone, at its junction with the Saône, is the city of **Lyons**, almost as large as Marseilles. Lyons is more identified with the manufacture of **silk** than any other town in the world. Up the Saône valley the southern slopes of the hills are clothed with rich vineyards. **Dijon** is the centre of the district making **Burgundy** wine. **Besançon**, on the Doubs, and all the district on the borders of Switzerland, are engaged in **watch-making**.

THE RHINE VALLEY. Alsace and Lorraine were regained by France in 1919. The fertile valleys of the Rhine and the Moselle are famed for their **vineyards**. The potash deposits of Alsace are the basis of a great **chemical** industry. The principal town is **Strasbourg**, a busy river port. The main railway line from Paris to Vienna and the East crosses the Rhine at Strasbourg. **Nancy** is the chief town of the Lorraine iron-district, and there are therefore numerous **blast-furnaces** in the neighbourhood. **Saarbrücken** is the largest town of the Saar coal-field. Its iron and steel works are among the largest in Europe. **Metz** on the Moselle is a strongly fortified town guarding an important route between France and Germany.

Corsica is a mountainous island in the Mediterranean belonging to France. Some of its peaks are nearly 9000 feet high. The population is grouped chiefly round the coast. The capital is **Ajaccio**.

THE ALPS.

DIVISIONS. The Alpine system of folded mountain-chains stretches from one extremity of Europe to the other, but the Alps in the limited sense are confined to France, Switzerland, Italy, and Austria, with a small strip in Germany. They are divided into the **Eastern Alps** and the **Western Alps.** A line joining the Lake of Constance to Lake Como marks the boundary between the two divisions. The Rhine valley coincides with this line for a long way.

The Western Alps are **higher** but **narrower** than the Eastern Alps. The glaciers and snow-fields of the Western Alps are therefore larger. The rocks of the Western Alps have been thrown into great **folds**, as is shown in Fig. 17, while the rocks of the Eastern Alps

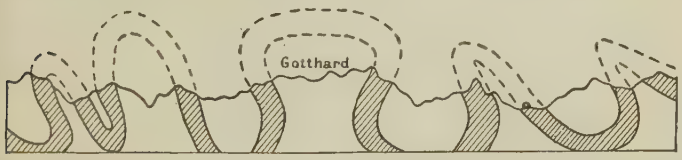

FIG. 17.—Section across the Alps through Mt. St Gotthard. One set of rocks has been shaded in order to make plain the enormous foldings of the rocks in the Alps.

lie in huge **horizontal** masses. This makes the **scenery** of the two districts quite different, that of the Western Alps being more peaked, rugged, and broken.

In the Western Alps, most of the rocks are hard, crystalline, and much changed from their original condition, and limestones occur only in comparatively narrow bands. In the Eastern Alps, particularly in the Austrian Tirol, many of the mountains are carved out of great limestone blocks. This fact also has a marked influence on the scenery.

In the Western Alps the principal peaks are—**Monte Rosa** (over 15,000 feet, and second only to Mont Blanc), the **Matterhorn** (14,780 feet), and the enormous mass of **Mont Blanc** (nearly 15,800 feet above sea-level). **Zermatt** is a favourite tourist centre, and the base of attack for climbers attempting the Matterhorn, while **Chamonix** is the nearest tourist centre to Mont Blanc.

The **snow-line** of the Alps varies a good deal, but about 9000 feet is an average value. The snow-fields above this line gradually consolidate into ice, and slow rivers of ice stream down many of the valleys far below the snow-line. The **glaciers** of the Alps move at the rate of about a foot a day. They are broken by

Fig. 18.—The Alps.

huge cracks called **crevasses**, and are generally dangerous to cross. These glaciers bear with them many boulders, and much sand and rock-waste. This is deposited in long lines along the sides, or at the end of the glacier, where it melts. The lines or heaps of rock rubbish are called **moraines**. Many perfect moraines may be seen in the mountainous parts of Britain, whence we conclude that glaciers must long ago have occupied the valleys of this country. At that time the glaciers and snow-fields of the Alps were very much larger than they are now.

CLIMATE. The southern slope of the Alps facing the sun is naturally much warmer than the northern. Thus the **vine** is cultivated along the southern slopes, while vineyards are, as a rule, absent from the northern slopes. The rainfall of the Alps is much higher than that of the surrounding lowlands. In places it is more than 100 inches per year, although sheltered valleys may only have a quarter of that amount. Travellers ascending a high mountain in the Alps pass over a succession of **vegetation zones** resembling those met with in going from the centre of Europe to the extreme north.

On the northern slopes of the Alps at times there blows a warm, dry wind, known as the **Föhn** (or Foehn). Before it the snow disappears like magic, and when it blows in autumn the crops rapidly ripen. Round the head of the Adriatic another wind sometimes blows, which is called the **Bora.** It is a biting, cold gale, that sweeps from the mountain summits and lashes the Adriatic into foam.

ROUTES ACROSS THE ALPS. There are now five railways that cross the Alps.

1. **Mont Cenis.** The chief route from France to Italy is by Mont Cenis. This line leaves the Saône valley at Macon, runs up the Arc valley, and reaches Italy by the **Mont Cenis Tunnel,** 7½ miles long. The line then runs down the **Dora Riparia,** which leads straight to **Turin.**

2. **Simplon.** From Lake Geneva, a line runs far up the Rhone valley, cuts through the Alps by the **Simplon Tunnel,** over 12 miles long, then runs down a valley to Lake Maggiore and **Milan.**

3. **St Gotthard.** A railway from Lucerne uses the **Reuss** valley, tunnels for 9½ miles through **Mt. St Gotthard,** and then by the **Ticino** valley reaches **Milan.**

4. **Brenner.** From **Verona** a line goes up the valley of the **Adige** to the **Brenner Pass,** 4500 feet above sea-level. It reaches the **Inn** valley at Innsbruck, runs down the valley for a time, and then crosses to **Munich.** There are nearly thirty tunnels, but the longest is just over half a mile in length.

5. **Semmering.** From **Vienna** a railway runs south-west across the **Semmering Pass** to **Graz** and the **Drave** valley, crosses to the **Save**, runs up the valley to **Laibach**, and then goes across the mountains to **Trieste.** After crossing the Semmering Pass a branch keeps more to the west, and finally reaches **Venice.**

SWITZERLAND.

RELIEF. In the south, Switzerland is crossed by the main ranges of the Alps already described. In the north-west are the **Jura Mountains**, the highest parts of which are between 5000 and 6000 feet above sea-level.

Between the Alps and the Jura is the **Swiss Plateau**, on which all the important towns are situated. This is a hilly, sandstone region, varying in height between 1000 and 3000 feet above sea-level. The lake scenery of the Swiss Plateau is especially beautiful. The principal lakes are **Lake Geneva**, the bottom of which is actually 200 feet below sea-level, **Lake Constance, Lake Neuchâtel, Lake Zurich**, and **Lake Lucerne.**

INDUSTRIES. Agriculture is vigorously carried on wherever the altitude is not too great. **Wheat** and, in favourable exposures, the **vine** are grown, but not in sufficient quantity to supply the needs of the country. The most important branch of agriculture is **dairy-farming.** This has led to large manufactures of **cheese** and **condensed-milk.**

Although Switzerland possesses very little coal or iron, it is, strange to say, an important **manufacturing country.** The lack of coal is compensated by the abundance of **water-power**; its **central position** is favourable for obtaining raw material, and the people are exceptionally well educated, and thus **highly skilled labour** is abundant.

The principal industry is the manufacture of **cotton**, carried on in central and north-eastern Switzerland. **Silks, watches** and **clocks,** and **machinery** are all made and exported.

TOWNS. The largest town in Switzerland is **Zurich**, which has manufactures of **silk** and **machinery**, and a famous university. It is

the centre of a populous district, and the crossing-place of railway routes. **Basle** is the busiest **railway centre** in the country. It carries on a large trade with Germany by means of the Rhine. **Silk** manufacturing is one of the chief industries. **Geneva** stands at the foot of the beautiful Lake of Geneva. It makes **watches, jewellery**, and **scientific instruments. Berne**, on the River Aar, is the capital of Switzerland. It is a tourist centre for visitors to the Bernese Oberland, and in addition it has **cotton** manufactures. **Lucerne** is the busiest tourist centre in Switzerland. Its situation on Lake Lucerne, overlooked by Pilatus and the Rigi, is particularly beautiful.

GERMANY.

RELIEF. Germany occupies the **most central** position of all the countries of Europe. This has had much to do with the great commercial progress shown by Germany, for, with the exception of Britain, the richest countries of Europe are grouped round her borders.

Four main physical regions may be recognised in Germany :

(1) **The Alps.** The most northerly ranges of the Eastern Limestone Alps run east from the Lake of Constance along the Austrian frontier, reaching a height of nine to ten thousand feet.

(2) **The Alpine Foreland.** The Alpine Foreland is a tableland or high plain with an undulating surface, lying mainly between the Alps and the Danube. It is almost entirely covered with material brought down by the glaciers of the Alps when they reached in former times as far north as Munich.

(3) **The Central and South-western Highlands.** All these highlands are dissected plateaus. The plateau of the **Vosges** to the west of the Rhine (now wholly in France) was once continuous with the **Black Forest** to the east. In the centre of Germany is an old, resistant block of rocks forming the **Harz Mountains**, which stand up like an island from the low country round about. Bohemia is almost encircled by the **Bohemian Forest**, the **Erz Gebirge**, and the **Sudetic Mountains.**

(4) **The Northern Plain.** The Northern Plain is undulating and rarely reaches 600 feet above sea-level. Notice the amazing number of **lakes** in the eastern part of the plain. These were formed by the damming back of the river-drainage by moraines left by glaciers that came, many ages ago, not from the Alps, but from Scandinavia. The greater part of the plain is unfertile, and minerals are few, so that the population is nowhere dense.

RIVERS. The most important river in Germany is the **Rhine.** It forms by far the best waterway in the country, and an immense amount of traffic passes up and down it. From Basle to Mainz the Rhine valley is very remarkable. A strip of the earth's crust about 20 miles broad and 200 miles long has sunk below the level of the surrounding country, forming a "rift valley," bounded by two parallel cracks or faults. The Rhine flows along the bottom of this valley. At Mainz the Rhine turns to the west, then bends to the north again, and cuts a deep and narrow gorge through the Central Highlands. This is the part of the Rhine most visited by tourists, on account of its beautiful scenery and the interesting old castles that crown the rocky banks. The most important tributaries of the Rhine are the **Neckar** and the **Main** on the right bank, and the **Moselle** on the left bank.

Unlike most of the great rivers of the country, the **Weser** lies entirely in Germany. The **Elbe** gathers all the streams of Bohemia, and flows through a narrow gap into Germany. As a waterway it is second only to the Rhine. The **Oder** enters Germany after having flowed through the important pass in the highlands known as the **Moravian Gate**, between the Sudetes and the Carpathians. In the south the Alpine Foreland is drained by the **Danube**, which rises in the Black Forest. Its most important tributaries in Germany are the **Isar** and the **Inn.**

CLIMATE. The climate of the west of Germany is not unlike that of England. The climate of the east, however, is somewhat extreme. Snow and keen frost last throughout the winter till the middle of March, the harbours of the Baltic and the rivers of East Germany being frozen every winter. The average rainfall of

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FIG. 19.—Germany, Belgium, and Holland.

Germany is a little less than 30 inches per annum, while some parts have less than 20 inches.

PRODUCTIONS. The richest agricultural part of Germany is the rift valley of the upper Rhine. Here **wheat** and **barley** predominate over **rye** and **oats**, which are the principal grain crops of all the other parts of the country. The valleys of the Rhine and its tributaries are the chief **vine** districts of Germany, and **hops** and **tobacco** are also grown largely there. In the north and north-east the chief crops, in addition to rye and oats, are **sugar-beet** and the **potato.** Potatoes are grown not only for food, but for the manufacture of spirits.

Germany is very rich in minerals, and the Germans have always led the world in mining methods. The most important minerals are **coal** and **iron.** Before the Great War Germany had surpassed the United Kingdom and ranked next the United States in the production of iron. Other important metals are **zinc, silver, lead,** and **copper.** Germany is the largest producer of zinc in the world, and the largest producer of silver in Europe. The chief coal districts are the **Ruhr** coal-field, and coal-fields in **Saxony** and **Silesia.** Iron is found in the coal-fields and the district south-east of Cologne. Zinc is mined chiefly in Silesia, and copper in the Harz. Very valuable are the rich deposits of **rock-salt** and **potash salts** round **Stassfurt,** which have made the name of this place familiar to every chemist in the world.

THE RHINE BASIN. On the Neckar is situated **Stuttgart,** the capital of Württemberg. It has manufactures of **cotton** and **wool,** and is an important **printing** and **publishing** centre. Lower down the Neckar is **Heidelberg,** with one of the most famous universities in the world. Round **Mainz** (Mayence), and stretching up the Main, are the richest vineyards in Germany. Hock wine is produced from them. **Frankfurt,** on the Main, is a great banking centre. Far up the Main is **Nürnberg** (Nuremberg), a busy manufacturing town in the centre of a hop-growing district.

Coblenz, at the junction of the Rhine and the Moselle, is a busy river-port. At **Cologne** (Köln) the railway from Paris to

Berlin crosses the Rhine. The town has a river front of six miles, and is a great river-port. Moderate-sized ocean steamers can come up to its docks. Its magnificent cathedral is one of the finest in Europe. The district round the junction of the Ruhr and the Rhine is the busiest manufacturing region in Germany. The towns obtain their power from the coal of the **Ruhr coal-field.** **Essen** contains the enormous iron and steel works of Krupp; **Barmen** and **Elberfeld** carry on every branch of the textile industry; **Krefeld** ranks next to Lyons for silk and velvet manufactures; **Düsseldorf** is a great river-port.

THE ELBE BASIN. After the Rhine, the Elbe is the chief waterway of the country. It enters Germany in Saxony, of which the capital, **Dresden**, is situated on the river. The town has many fine buildings and famous art galleries. The neighbourhood is noted for the manufacture of **porcelain.** Power is obtained for the industries of Saxony from the **coal-field** that stretches west from **Chemnitz.** This town is the chief seat of the **cotton** trade, and manufactures **machinery** as well. In both these respects it resembles Manchester. In the north-west of Saxony is **Leipzig**, the most important centre of the **printing** and **publishing** trade in the country. Lower down the Elbe, in a fine central situation for trade, is **Magdeburg.** It is near the enormously rich mineral deposits of Stassfurt, and the district has, therefore, more **chemical works** than any other district of the same size in the world. Magdeburg is also one of the chief centres of the manufacture of **beet-sugar.**

Berlin, the capital of Germany, is situated on the Spree. It is now the greatest manufacturing and trading centre in Germany, the making of **clothing** being the principal industry. Near it is **Potsdam**, the residence of the former emperors, with its castles hidden among trees, and beside the lakes of the Havel. With its suburbs, the population of Berlin is over two millions.

THE ODER BASIN. **Breslau**, on the upper Oder, owes its importance largely to its position at the intersection of trade routes. It is the centre of a rich agricultural district devoted largely to **beet-growing** and **sugar-making**, and it is not far from the valuable

Silesian coal-field. In the town itself, textile manufactures are important. Iron and lead are obtained in the neighbourhood, and more **zinc** is mined in Upper Silesia than in any other part of Europe. A densely populated **mining** and **manufacturing** district therefore exists south-east of Breslau.

THE DANUBE BASIN. The most important town of the Alpine Foreland is **Munich**, on the Isar. It is a beautiful town, with splendid **art collections.** It is the largest **brewing** town in Germany.

THE BALTIC SEA PORTS. The coast of the Baltic is low and sandy. It is indented with numerous broad inlets, protected by long sandspits formed by wave and current action. These inlets are called **haffs**, and have been formed by the ponding back of rivers by the storm-beaches formed across the river-mouths. One of the most interesting products of this district is **amber**, which is a fossil gum or resin.

The ports of the Baltic are hampered by being closed by ice in winter. **Königsberg** has a large export trade in **timber** (floated down the rivers from Russia), **grain**, **flax**, **hemp**, and **potatoes**, all products characteristic of the Baltic provinces. The largest Baltic port is **Stettin**, at the mouth of the Oder. It handles a good deal of the trade of Berlin. It has **cement** and **sugar** factories and large **shipbuilding** yards. **Kiel**, at the end of the great Ship Canal from the Baltic to the North Sea, is the principal **naval station** of Germany.

THE NORTH SEA PORTS. By far the greatest seaport of Germany is **Hamburg**, at the mouth of the Elbe, the second largest town in the country. It is the centre of a fine system of waterways. The chief imports are coffee, wheat, wool, and cotton. Coal from Britain is also important. Hamburg is in addition a busy manufacturing town. Great steamship lines connect it with all parts of the world. **Bremen**, at the mouth of the Weser, has been surpassed by Hamburg because it stands on a smaller river and has a less important "hinderland." Its trade is chiefly with the United States. It imports more tobacco and rice than any other town in the world,

and more cotton than any other town in Germany. On Jade Bay is **Wilhelmshaven**, a **naval station**

POLAND.

RELIEF. Poland extends from the Carpathian Mountains to the Baltic Sea. It might be considered roughly as the basin of the River Vistula. It has no large port, for Danzig, the natural outlet of the Vistula basin, is administered by the League of Nations. In the extreme south the Carpathian ranges rise to a height of nearly 9000 feet, but all the rest of the country is a flat plain.

CLIMATE. The climate is somewhat extreme, that is, it is intermediate between the extreme type of eastern Europe and the maritime type of western Europe. The rainfall is not high (20 inches roughly), and the rain falls fairly uniformly at all seasons, with a tendency to a summer maximum.

PRODUCTIONS. Most of Poland is an agricultural region. In the north the usual **Baltic products** (oats, rye, barley, potatoes) are grown. Farther south, particularly about Posen, **wheat** and **sugar-beet** are the chief crops. In this district, too, the **vine** is cultivated farther north than in any other part of the world. There are rich **coal-fields** near Warsaw, so that this district is a mining and manufacturing one, with a dense population. In the extreme south-west of the country (Polish Silesia) there is another rich coal and iron district. Lead and zinc are also mined in this area, and other minerals are obtained from the Carpathians. There are very valuable **oil-fields** in eastern Galicia.

INDUSTRIES AND TOWNS. The capital, **Warsaw**, on the middle Vistula, is the centre of a densely populated manufacturing district. It is a town of over three-quarters of a million inhabitants, and manufactures large quantities of cotton and woollen goods and machinery. **Lodz**, at the western extremity of the same coal-field, is the second largest city, and specialises in cotton goods. **Cracow**, on the upper Vistula, is the centre of a district rich in minerals, particularly salt and petroleum. **Poznan (Posen)** is the

chief town of a very rich agricultural district. Because of the abundance of grain and sugar in Poland, distilleries and sugar-refineries are found in nearly all the towns of any size.

PLEBISCITE AREA. South-west of Poland is the **Upper Silesian plebiscite area,** which in 1921 voted for Germany. In spite of this decision, over 1200 square miles of territory, with a population of nearly a million, were added to Poland. It is a busy mining and manufacturing district, the chief town of which is **Königshütte.**

CZECHOSLOVAKIA.

RELIEF. Czechoslovakia consists of the three districts **Bohemia, Moravia,** and **Slovakia.** Bohemia is a well-defined natural region. It is diamond-shaped, and bounded on three sides by mountains, the **Bohemian Forest,** the **Erz Gebirge** (Ore Mountains), and the **Sudetes,** the highest part of which is called the **Riesen Gebirge** (Giant Mountains). Bohemia is a plain or low plateau, with an average elevation of about 1500 feet. The surrounding mountains face it in very steep walls, for the area has been faulted or cracked along its boundary, and the interior part has sunk. Bohemia is drained by a number of rivers that join the **Moldau,** which bisects the country in a north and south direction. The **Elbe** joins it from the east, and the combined river is known by that name, and flows by a deep gorge through the mountains into Germany.

Moravia lies between Bohemia and the Carpathian Mountains. The mountain barrier to the north is broken by a gap between the Sudetes and the Carpathians, through which the **Oder** flows. This gap forms an easy and important route between Central and Northern Europe. It is known as the **Moravian Gate.**

Slovakia is not so well defined as Bohemia or Moravia. It comprises the western ranges of the Carpathians and the northern part of the Hungarian basin. Between Poland and Slovakia the Carpathian Mountains rise to a height of nearly 9000 feet. The south-eastern frontier—between Slovakia and Hungary—has not

been settled. It will be very difficult to fix, for this region is peopled by a mixture of races—Slovaks, Germans, Magyars, and Ruthenes.

PRODUCTIONS. Bohemia is an agricultural, mining, and manufacturing region. The principal crops are **wheat**, **hops**, and the **sugar-beet**. There are valuable fields of **coal** and other minerals, including **pitch-blende**, from which radium is obtained. In the north of Moravia are the rich **Silesian coal-fields**. Most of the province, however, is agricultural and forest land. Agriculture and forestry, with some mining, are also characteristic of Slovakia.

INDUSTRIES AND TOWNS. Owing to its plentiful supplies of coal and other minerals, Bohemia is the principal manufacturing district of Czechoslovakia. It has long been famous for its **glass-making**. We have seen that beets and hops are grown there, and therefore Bohemia manufactures **sugar** and brews **beer**. The chief brewing centre is **Pilsen**. The traffic of Bohemia naturally converges to **Prague**, a city of more than half a million inhabitants situated on the Moldau, and the capital of the country. Prague is an engineering centre, and builds locomotives and railway cars. **Carlsbad** and **Marienbad** are inland watering-places famous throughout Europe. They owe their existence to numerous mineral springs that are found in this locality. The second largest town of Czechoslovakia is **Brno** in Moravia, a great centre of the woollen industry. Not far to the east is the famous battlefield of **Austerlitz**. The largest town of Slovakia is **Bratislava**, on the Danube, situated where the river breaks through the mountain barrier into the Hungarian Plain.

The Czechs of Bohemia and Moravia are probably the most cultured, the best educated, and the most progressive of all the Slav nations.

AUSTRIA.

RELIEF. As a result of the European War, Austria, from a great empire, has become a country about the size of Scotland. Much of the country is mountainous, the low ground consisting mainly of

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Fig. 20. Austria, Hungary, and Czechoslovakia

part of the Danube basin. The mountainous western part of the country, known as the **Austrian Tirol**, shows the typical features of the Eastern Alps. This part of Austria is crossed by the **Brenner route** from Germany to Italy.

PRODUCTIONS. The usual Central European crops are grown, including **grain** and **sugar-beet**. The **vine** grows well on the valleys of the Austrian Alps that open to the south. The mountain pastures are used for **dairy-farming**. Austria is rich in minerals, of which the chief are **coal** and **iron**. Iron is found at Eisenerz (Iron-ore) where there is a mountain of pure iron-ore.

INDUSTRIES AND TOWNS. The capital of Austria is **Vienna**, a town containing over two million inhabitants. It is a good example of a town growing up at the place where several important routes cross. The principal land route between western Europe and Asia is that from Paris to Constantinople, and Vienna stands midway along it. It is the most centrally situated of all the capitals of Europe, and it stands at the meeting of routes from all parts of Europe. The city is a famous centre of literature, art, and science, with a great university. It is also a busy manufacturing town, being especially noted for silks, furniture, and fancy goods.

The second largest town in Austria is **Graz**, on the main line from Vienna to the Adriatic. It is an important iron and steel centre. The part of the Eastern Alps known as the **Tirol** is visited by large numbers of tourists for its beautiful scenery. The chief town is **Innsbruck**, on the Inn. Another tourist centre is **Salzburg**, near which, as the name indicates, there are important salt-mines. The capital of Upper Austria is **Linz**, on the Danube.

In the south of Austria is the **Klagenfurt plebiscite area**—part of the Drave basin—which in October 1920 decided to adhere to Austria.

HUNGARY.

RELIEF. The structure of Hungary is simple. It consists of a great plain surrounded by a ring of barrier mountains. It is a **foundered area**, a land that has gradually sunk. In many ways it

resembles the foundered Western Mediterranean basin, although the sinking has not gone so far as to bring the area below sea-level. The country is bisected from north to south by the important international waterway, the River **Danube**. On the right bank of the Danube is the great tributary the **Drava**, which comes from the snow-fields of the Alps, and divides Hungary from Yugoslavia. On the left bank is the large tributary the **Tisa** from the far Carpathians.

CLIMATE AND PRODUCTIONS. The climate is continental, with hot summers, cold winters, and a rainfall maximum in summer. Hungary is one of the chief grain-growing parts of Europe, producing great quantities of **wheat** and **maize**. The **sugar-beet** and the **vine** are also largely grown. Hungarian wines are famous. The drier steppe-land of the plain pastures enormous herds of **cattle** and **horses**.

INDUSTRIES AND TOWNS. Flour-milling is important, and most of the towns have sugar-refineries, breweries, distilleries, and leather-works. The making of agricultural implements is the chief branch of engineering. In recent years silk-culture has increased very rapidly. The capital is **Budapest**, a double town built on both banks of the Danube. The routes through the fertile wheat-lands of the Hungarian Plain converge on Budapest. It is therefore a great flour-milling city, and is the principal manufacturing centre of the country. The town has nearly a million inhabitants.

ROMANIA.

Romania has expanded its frontiers greatly since the European War. It now occupies both the southern and the northern slopes of the Transylvanian Alps, and extends north-eastwards to the Dneister. The mountains fall rapidly from heights of over 8000 feet to low plains bordering the Danube on the east, and forming part of the Hungarian Depression on the west. The flat lands east of the mountains are really part of the great Russian Plain, and include portions of the "black earth" region of the Russian Steppes.

Most of the country is devoted to agriculture, but there are rich mineral deposits of which the chief are **rock-salt** and **petroleum.** Large crops of **wheat** and **maize** are grown, and considerable quantities are exported to Britain. On the lower slopes of the hills, **fruit** and **wine** of good quality are produced. In the forests and on the hill pastures **pigs** and other live stock are kept. In the former Russian province of Bessarabia the inhabitants are engaged mainly in rearing sheep and cattle. The fisheries of the Danube are valuable.

The capital is **Bucharest,** a finely built modern city with a university. **Galatz,** a river-port on the Danube, exports large quantities of grain.

RUSSIA IN EUROPE.

RELIEF. Russia[1] in Europe is essentially a **continental** country. Much of its interior is far away from any sea. Most of it is occupied by the European Plain, an undulating expanse that reaches its greatest height in the **Valdai Hills,** 1100 feet above sea-level. These hills form the **chief watershed** of Russia, and all the large rivers rise near them. Round the Caspian Sea there are extensive areas that are below sea-level. Round the borders of the country the land is higher. The broad range of the **Ural Mountains** in the east rises to more than 5000 feet. Notice how the Urals are continued out to sea, as the islands of Waigatz and Novaya Zemlya. In the south are the gigantic ranges of the **Caucasus,** attaining in **Mount Elbrus** a height of over 18,000 feet. The line of the Caucasus is continued across the Caspian Sea as a submarine ridge.

RIVERS. Trace the most important rivers on the map. Notice that from the centre of the country they radiate in all directions, thus forming splendid waterways. The **Ural** River flows from the Ural Mountains to the Caspian Sea. The **Volga** is the largest river in Europe, and the greatest highway in Russia. Its chief tributaries are the **Oka** on the right bank, and the **Kama** on the left bank. The **Don,** with its tributary the **Donetz,** flows into the Sea of Azov. Farther west are the **Dnieper** and the **Dniester,** flowing into the

[1] Now known as "The Union of Socialist Soviet Republics," with the abbreviation U.S.S.R.

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Fig. 21.—Russia and Baltic States.

Black Sea. On the west the **Duna** flows into the Gulf of Riga, and the **Neva** into the Gulf of Finland. The **Northern Dvina** flows into the White Sea, and the **Petchora** into the Arctic Ocean.

CLIMATE. The climates of various parts differ considerably, but on the whole the climate may be described as **extreme.** In the central plains, for example, there is keen frost for four months in winter, and two months of intense heat in summer. The cold winters are a great **drawback to navigation.** Archangel is free from ice for only six months in the year, and even Astrakhan, on the Caspian Sea, is impeded with ice for three months of the year. The rainfall is of the **continental** type, not very high, and falling chiefly in summer.

VEGETATION ZONES. All the chief vegetation zones of Europe are represented in Russia. Bordering the shores of the Arctic Ocean are the **Tundras.** A line drawn east from the Gulf of Finland marks roughly the southern limit of the **coniferous forests.** A line running north-east and south-west, and dividing the rest of the country into two approximately equal parts, marks the boundary between the **deciduous forests** of the Baltic provinces and the **steppes** of the Black Sea and Caspian Sea regions. In the south of the Crimea the **Mediterranean plants** prevail.

PRODUCTIONS. The **forests** of Russia form one of its most valuable resources, and large quantities of **timber** are exported every year. More important still are the corn crops, of which **rye** and **oats** are the chief. In the steppes, wherever the rainfall is great enough, **wheat** is the principal crop, and large quantities are exported to Britain. **Flax** and **hemp** are largely grown in the northern and Baltic provinces. In the west and south-west the **sugar-beet** is important. In many parts of the steppes, too dry for agriculture, the rearing of **cattle** and **horses** is the chief occupation.

Coal and **iron** are abundant. The two chief coal-fields are the **Donetz coal-field,** and the **Tula coal-field,** south of Moscow. Coal is also found near the Ural Mountains. In most of these coal-fields **iron** is also found, and there are valuable deposits also in other parts

of the country. **Gold**, **platinum**, and **copper** are found in the Ural Mountains.

NORTHERN RUSSIA. The north of Russia is thinly populated. The inhabitants are occupied chiefly in **lumbering** and **fishing**. Timber is exported, and **tar** and **pitch** are made from the wood of the pine. The trade in **furs** is valuable. The chief port of this region is **Archangel**, at the mouth of the Dvina, from which all the articles mentioned are exported. Recently it has begun to export large quantities of **wheat from Siberia**. There are large **sawmills** in the town. In 1916 a railway was completed to **Alexandrovsk**, a port free from ice all the year.

LENINGRAD. Leningrad (formerly Petrograd) is built on piles among the swamps of the River Neva. It is an important centre of art, science, and literature. Although it is free from ice for only seven months in the year, it is the greatest seaport in the country. Before the war the population was over two millions. The city is protected by the strongly fortified naval port of **Kronstadt**, about twenty miles down the gulf.

SOUTHERN RUSSIA. In the south of Russia is the "black earth" region, a fertile belt that stretches from the Dnieper to the Ural Mountains. Where the rainfall is sufficient, wide areas are sown with **wheat**, although the methods of agriculture in use are very primitive. The chief port of the district is **Odessa**, on the Black Sea, with a trade almost equal to that of Leningrad. **Kiev**, on the Dnieper, has important manufactures of **sugar** and **leather**. At the mouth of the Dnieper is **Kherson**, a rapidly growing port with a large trade in **grain** and **hides**. **Kharkov** is a busy manufacturing town, not far from the Donetz coal-field.

THE VOLGA BASIN. The Volga is the longest and largest river in Europe, and one of the finest waterways in the world. It can be navigated by steam vessels for 1600 miles from its mouth. Its tributary, the Oka, waters for nearly a thousand miles the most fertile parts of central Russia. On a tributary of the Oka stands **Moscow**, the capital of the country. It is situated almost in the centre of Russia, so that roads and railways radiate from it in all

directions. The **Kremlin** is a wonderful collection of churches, monasteries, barracks, and palaces. Moscow has important **cotton** manufactures, and is the chief centre of the **printing** and **publishing** trade. Its university is one of the most important in Europe. The population is nearly two millions.

On the coal-field south of Moscow is **Tula**, the chief **steel** town of Russia. **Cutlery, fire-arms, machinery,** and all kinds of **metal goods** are made here. At the junction of the Oka and the Volga is **Nijni-Novgorod,** famous for its great yearly fairs, at which goods to the value of £20,000,000 are sometimes sold. On turning south the Volga receives the Kama, which drains the west flank of the Urals. **Perm,** on the Kama, is the centre of a **mining** district. A railway starts from the town across the Urals, and this makes it an important centre of Siberian trade. **Saratov** is the chief centre of trade of the lower Volga. It is a busy manufacturing town in a rich **wheat** and **tobacco** growing district. At the mouth of the river is **Astrakhan,** the chief port of the Caspian Sea, and the centre of the **sturgeon** fisheries. Caviare, or sturgeon's roe, is largely exported.

Since the Great War Russia has split up into several independent republics, the boundaries of which are not yet definitely fixed.

THE PENINSULAS OF THE MEDITERRANEAN.

THE IBERIAN PENINSULA.

RELIEF. After Switzerland, Spain and Portugal form the most mountainous region in Europe. Most of the interior is occupied by a high and rugged plateau, called the **Meseta,** which is highest along its north-eastern edge, and slopes gradually to the west. The steep southern edge facing the river Guadalquivir is called the **Sierra Morena.** The high north-east edge is called the **Iberian Mountains,** and in the north-west the edge of the Meseta forms a continuation of the **Cantabrian Mountains.** Notice that all these so-called ranges have really the structure of escarpments.

Above the general level of the Meseta, which varies from 2000 to 5000 feet above sea-level, there stand numerous saw-toothed ridges

Bartholomew, Edin.r, delt.

Fig. 22.—Spain and Portugal.

or sierras. Between the Douro and the Tagus are the **Central Sierras**, or mountains of Castile, rising 8000 feet above the sea. Between the Tagus and the Guadiana is the much lower **Sierra de Toledo.** North and south of the Meseta occur **folded ranges** belonging to the Alpine system. The **Pyrenees Mountains** consist of parallel chains, that rise in the summit of **Maladetta** to 11,000 feet above the sea. They are continued without a break as the **Cantabrian Mountains**, the western part of which becomes lower and merges into the northern escarpment of the Meseta. In the south the folded ranges of the **Sierra Nevada** rise so steeply that **Mulhacen** (11,500 feet), the loftiest mountain in Europe outside the Alps and the Caucasus, is just over twenty miles from the coast. The broken end of the Sierra Nevada forms **Cape Nao**, and then the range appears again at Iviza, Majorca, and Minorca.

RIVERS. Most of the rivers flow across the Meseta to the west. As a rule they run in rocky channels cut deep into the plateau, and are, therefore, of little use for navigation. The one exception is the **Guadalquivir**, which runs along the fracture or fault that terminates the Meseta on the south. It is navigable as far as Seville. Next in importance is the **Ebro**, which is much more valuable for **irrigating** the fertile plains of Aragon than for navigation. The other rivers of importance are the **Minho**, forming part of the boundary between Spain and Portugal, the **Douro**, and the **Tagus**, on the estuaries of which are the greatest towns of Portugal, and the **Guadiana.**

CLIMATE. Along the north and north-west coasts the climate is **maritime**, with mild winters, and rain throughout the year. Along the Mediterranean the climate is typical of that region. The climate of the Meseta is very **extreme**, with cold winters and intensely hot summers. The rainfall is scanty in most districts, being, as a rule, less than 20 inches a year.

PRODUCTIONS. The vegetation and the crops depend largely on the climate. Throughout the country, **wheat** is important. Along the Mediterranean coast the "huertas" (gardens) are irrigated tracts producing the **orange**, the **vine**, the **olive**, the

mulberry, and even the **sugar-cane**. Where irrigation is not practised, **esparto-grass** is grown for paper-making. In Portugal the forests of **cork-oak** are specially valuable. In the dry interior, **sheep** and **cattle** are reared. Spanish merino wool was once the finest in the world, but its quality has deteriorated.

The Iberian Peninsula is exceptionally rich in minerals. **Iron-ore** of high quality is found in many parts of the peninsula, but chiefly round **Bilbao**. Over three-quarters of our total imports of iron-ore come from Spain. **Copper** is obtained from the immensely rich **Rio Tinto** mines, on the southern slopes of the Sierra Morena. The chief **coal-field** is that round **Oviedo**, while **Almaden** is the most important **quicksilver** centre in Europe. **Lead** and **silver** are found in many places, particularly in the Sierra Morena and Sierra Nevada.

COMMUNICATIONS AND TOWNS. SPAIN. The nature of the country makes communication with the interior extremely difficult. Only two railways enter Spain from France, one to the east, the other to the west, of the Pyrenees, although others are in progress. The easiest access to the country is from the Atlantic by the river-valleys that open to the west, and up several of these railway-lines run to Madrid. The capital of Spain is **Madrid**, which has no geographical advantages except that of a central position. It has a population of over half a million. All the other large towns are situated on the coast, or near the margin of the Meseta. **Barcelona** is almost as large as Madrid, and is the chief **seaport** and the most important industrial town. It is the centre of the **cotton** manufactures. **Valencia** is a seaport with a large trade in fruit and wine. It is the chief seat of the **silk** industry. **Malaga** exports the fruit and wine of the fertile south Mediterranean coast. In Andalusia, **Cadiz** is a fortified naval harbour, and a little inland is **Jerez**, in the centre of the district making **sherry** wine. **Seville**, at the head of navigation of the Guadalquivir, is the second port of Spain in size. In the upper basin of the river, **Granada** is famous for the **Alhambra**, a splendid example of Moorish architecture. At the mouth of the Rio Tinto is **Huelva**, a great **copper** port. Near it is **Palos**, a place for ever famous as the starting-point of Columbus when he set out

on his first voyage to the New World. **Ferrol** in the north-west, and **Cartagena** in the south-east, are naval stations. **Zaragoza** is the largest town in the Ebro valley. **Toledo**, on the Tagus, was the former capital, and is still noted for its sword-blades.

PORTUGAL. The capital is **Lisbon**, where the estuary of the Tagus forms one of the finest natural harbours in the world. It is the outlet of the trade of a region of great fertility. **Wine** is exported, and there are **textile** manufactures. The only other large town in Portugal is **Oporto**, at the mouth of the Douro, which is the chief **wine** port of the country. The Douro irrigates a famous vine-growing district that produces port wine. The third port in size is **Setubal**, which exports **salt** of a very high quality.

GIBRALTAR. Gibraltar is a rocky promontory, nearly 3 miles long and 1400 feet high. The rock is very strongly fortified, and commands the entrance to the Mediterranean. There is a good harbour, used as a **naval** base and as a **coaling**-station. The rock has been a British possession since 1704.

ITALY.

RELIEF. Italy owes its position and shape to the fact that a branch of the Alpine system of folded mountains, the **Apennines**, leaves the main chains, and running south-east projects into the Mediterranean. The Apennines do not consist of one simple chain, but of a number of successive ridges. The southern parts of the main chains of the Alps are included in Italy. They are bounded on the south by a **line of fracture**, and the sunken land to the south of this line forms the low and fertile **Plain of Lombardy**. The Italian lakes of the Alps are famous throughout the world for their beautiful scenery. The largest are **Lake Maggiore, Lake Como**, and **Lake Garda**. They are long, narrow, and very deep. In all three cases the lake-bottoms sink hundreds of feet below sea-level.

VOLCANOES AND EARTHQUAKES. The land bordering the Tyrrhenian Sea is noted for its earthquakes and volcanoes. There have been more destructive earthquakes in Calabria, the "toe" of

Italy, than in any other part of the world. The two best-known volcanoes of the world are **Vesuvius**, near Naples, and **Etna**, in Sicily, the latter a huge volcanic mountain over 10,000 feet high. **Stromboli**, in the Lipari Islands, is also a well-known volcano.

The causes of volcanoes are even yet not well known, but it has been observed that volcanic outbreaks are often associated with important fault-lines or movements of the earth's crust. Minor earthquakes may be caused by volcanoes, but the great shocks that make the whole globe tremble are probably caused by movements of the crust along lines of fracture.

RIVERS AND COMMUNICATIONS. The chief river of northern Italy is the **Po**, which waters the fertile Plain of Lombardy. The rushing torrents that join it from the Alps have gradually pushed its bed towards the south, so that in places it has been thrust close against the foothills of the Apennines. In the west, the **Dora Riparia** forms an easy route for the railway from the Mont Cenis tunnel to reach Turin. The **Ticino** comes from Lake Maggiore, and the valley of a stream flowing into this lake is used by the railway from the Simplon to Milan. The Ticino valley above Lake Maggiore is used by the St Gotthard railway, which runs also to Milan. The valley of the **Adige** forms an important part of the Brenner route across the Alps. The ease with which traffic can be carried on with central Europe by means of these routes causes most of Italy's produce to be exported by rail, in spite of the numerous fine harbours possessed by the country. The only other rivers of importance are the **Arno** and the **Tiber**, the valleys of which are joined by an inland railway.

CLIMATE. The country is sheltered from the cold north winds by the Alps and the northern ranges of the Apennines. The nearness of all parts of Italy to the sea also improves the climate. The type of climate is **Mediterranean**, with hot, dry, brilliantly sunny summers and mild winters, during which most of the rainfall occurs. Look at Fig. 2 on p. 13, which shows how the rainfall at Palermo varies throughout the year. One great drawback is the liability to malaria

in many of the low-lying districts, which, although fertile, are thus rendered uninhabitable.

PRODUCTIONS. Italy is very poor in minerals. Coal is absent, and has to be imported, chiefly from Britain. There are rich deposits of **iron-ore** in Elba, and from Sicily there is a large export of **sulphur.** The only other mineral of special importance is the fine, white statuary **marble** quarried near Carrara.

Italy is chiefly an **agricultural** country. All the ordinary European crops, and even some tropical ones, can be grown. **Irrigation** is practised in many districts, and in places increases the yield ten or twenty times. The **olive**, the **mulberry**, the **vine**, **oranges**, and **lemons** are characteristic of the country. Italy ranks next to France as a **wine-producing** country. **Rice** is the most valuable crop of Lombardy, and Sicily has long been famous for **wheat.** From a hard variety of wheat grown in the south of Italy, **macaroni** is made. **Maize** is also largely grown and provides one of the chief foods of the peasants. The rich meadows of Lombardy cause **dairy-farming** to be important, and thus Italian **cheese** (Parmesan, Gorgonzola) is famous.

INDUSTRIES AND TOWNS. NORTHERN ITALY. In northern Italy the chief towns have grown up in positions that command easy routes across the mountains. Thus **Turin**, on the Po, is opposite the Dora Riparia. **Milan** is the largest trading centre of the north, and the chief seat of the **silk** industry. The beautiful cathedral of Milan is famous. **Verona**, on the Adige, commands the Brenner route across the Alps; while **Bologna** is the starting-point for a railway route across the Apennines to Florence. **Venice** has still a large shipping trade. It is built on a number of islands in a lagoon, and boats are therefore used instead of carriages. One of its most beautiful buildings is the Cathedral of St Mark. On the north-east coast of the Adriatic Sea stands **Trieste,** ceded by Austria in 1919. **Genoa** is now the chief seaport of Italy. It has as its hinterland the upper basin of the Po. Genoa is now connected with the northern plain by rail. To the south-east is **Spezia**, a naval station.

CENTRAL ITALY. In the Arno basin the chief town is **Florence,**

REFERENCE
Above 6000 FT
3000 TO 6000
1000 TO 3000
0 TO 1000
English Miles
0 50 100
Udine
Trieste
Fiume
Milan
L. Garda
Verona
Venice
Turin
R. Po
Genoa
Bologna
Spezia
Florence
Nice
Leghorn
Pisa
Ancona
ADRIATIC SEA
CORSICA
Elba
Gran Sasso
Ajaccio
Civitavecchia
ROME
R. Tiber
M. Gargano
Str of Bonifacio
Naples
Brindisi
Gulf of Taranto
SARDINIA
TYRRHENIAN SEA
Cagliari
C. Teulada
Stromboli
Lipari Is
Palermo
C. Spartivento
Messina
SICILY
Catania
MEDITERRANEAN SEA
Tunis
C. Passero
AFRICA
Malta (Br)
Bartholomew, Edinr. delt

FIG. 28.—Italy.

commanding a route down the Arno, another across the Apennines to Bologna, and another to Rome. The buildings and the art-collections of Florence are among the most beautiful in the world. Lower down the river is **Pisa**, with its famous leaning tower. In **Leghorn** and the surrounding district, **straw-plaiting** is an important industry.

The capital of Italy is **Rome**, on the River Tiber. Its central position makes it a very convenient seat of government. The ruins of the **Forum** and the **Colosseum** recall the time when Rome was mistress of the world. **St Peter's** cathedral is the most famous church in the world. The palace of the Pope is called the **Vatican**, while the King of Italy resides in the **Quirinal**.

SOUTHERN ITALY AND SICILY. **Naples**, on its magnificent bay, is the largest city in Italy, having a population of nearly three-quarters of a million. It is the centre of a very rich agricultural district, and is an important seaport. Near it are the ruins of Pompeii and Herculaneum, buried by an eruption of Vesuvius in A.D. 79. On the east coast, **Brindisi** is a packet-station for mails and passengers to and from the Suez Canal by the overland route. The largest town in Sicily is **Palermo**, in the centre of a magnificent fruit-growing district. The sulphur of Sicily is exported largely from **Catania**, on the east coast.

MALTA. The island of Malta is a British possession, sixty miles south of Sicily. The chief port, **Valetta**, is very strongly fortified, and is an important coaling-station. The island is very fertile, and rich crops are produced. Large quantities of early potatoes are sent to the British markets.

TRENTINO. By the peace treaty of 1919 Italy gained from Austria the district of the Trentino. This is a mountainous area stretching north from Lake Garda on both sides of the Adige valley. This valley forms part of the Brenner Pass route across the Alps, and the Pass is exactly on the new frontier between Italy and Austria.

FIUME. On the Adriatic coast south of Trieste is the former Hungarian seaport of **Fiume**. After the Great War, it was claimed both by Italy and Yugoslavia, but in 1924 it was agreed to hand

it over to Italy. In spite of natural disadvantages, it is a great **grain** and **flour** port, and has petroleum refineries and rice-mills.

THE BALKAN PENINSULA.

RELIEF AND COMMUNICATIONS. The Balkan Peninsula may be considered as being made up of **two systems of folded mountains**, between which there is a high and rugged **dissected plateau**. The Carpathian system, broken through at the Iron Gates by the Danube, is continued to the south, and then to the east, as the **Balkan Mountains**, the lofty central ridge of which is nearly 8000 feet high. In the west the Dinaric Alps run to the very south of the peninsula, the eastern ranges being known as the **Pindus Mountains**. It is the running out to sea of the mountain-ranges that gives the peculiar "fingered" appearance of the peninsula. Between the Pindus and the Balkans the rugged plateau is highest in the wild **Rhodope Highlands**, some of the peaks of which are nearly 10,000 feet above sea-level. In the high ground occur numerous **fertile basins and valleys**, capable of supporting a much larger population than inhabits them at present.

The islands round the coasts illustrate still further the structure described. In the west the **Ionian Islands** form a long chain which is simply a **submerged range** of the folded mountain system. The line of this submerged range is continued in a curve to Asia Minor by a festoon of islands, the chief of which are **Crete** and **Rhodes**. Now look at the **Cyclades** on a map. They occur in confused groups and not in lines, because they represent the peaks of a **submerged dissected plateau.**

The Balkan Peninsula forms a connecting link between Europe and Asia, and therefore the routes across it have always been of great importance. Two long valleys are connected by low passes, so as to form practically a continuous valley right through the peninsula. This route is known as the **Diagonal Furrow**, and is formed by the valley of the **Morava**, which flows to the Danube,

and the valley of the **Maritsa**, which flows into the Ægean Sea. This is the route taken by the Oriental Express to Constantinople. From **Nis** another very important railway route is by a pass to the valley of the **Vardar**, and thence to Salonika. These two routes have always been the principal commercial highways of the peninsula.

CLIMATE. The climate of the Balkan Peninsula varies very considerably. In the centre and east it is not unlike that of southern Russia, with cold winters, hot summers, and rain distributed fairly evenly throughout the year. The south and west coasts have a Mediterranean climate, although along the west coast the rainfall is heavier in summer than in most typical Mediterranean regions.

PRODUCTIONS. Along the west coast the usual Mediterranean vegetation is splendidly developed. Evergreen plants, olives, the vine, oranges, and lemons are everywhere seen. The scanty rainfall on the south and east coasts makes these regions barren and dusty in summer. Farther east, towards Constantinople and the Black Sea, many parts are quite similar to the steppes of Russia. In the interior the vegetation resembles that of central Europe. There are valuable mineral deposits throughout the peninsula, but they are almost totally neglected.

YUGOSLAVIA. The official name of Yugoslavia (The South Slav State) is the Serb-Croat-Slovene State. The new kingdom stretches from the Austrian frontier nearly to the Ægean Sea. It includes the former kingdoms of Serbia and Montenegro, and most of the former Austrian territory that lay between the River Drava and the Adriatic Sea. On the north is the Klagenfurt plebiscite area which in 1920 decided to adhere to Austria.

RELIEF. The ranges of the Eastern Alps curve southwards into Yugoslavia, and run parallel to the Adriatic coast. The Alpine region parallel to the Adriatic forms a peculiar country known as the **Karst**. The rocks are largely of limestone, which is easily dissolved. The rivers, therefore, may suddenly disappear into caves, flow underground, and reappear in quite a different place.

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FIG. 24.—The Balkan Peninsula.

Because of this, the valleys are not continuous, and so communication is extremely difficult. The region on the whole is very barren, for, although the rainfall is heavy, it sinks underground through the porous limestone.

PRODUCTIONS. Many of the basins and valleys are very fertile, and splendid crops could be obtained with better methods. Agriculture and the rearing of live stock are the principal occupations. **Maize** and **wheat** are the chief crops, and **plums** (for prunes), **sugar-beet,** the **vine,** and the **mulberry** are grown. Great herds of pigs are fed in the forests of oak and beech that clothe the mountain-slopes.

COMMUNICATIONS AND TOWNS. Yugoslavia has fairly good trading facilities. Notice the following points: 1. The Diagonal Furrow passes through the country. 2. The fine waterways of the Danube, the Sava, and the Drava serve the northern area. 3. The country has free access to a good seaport on the Ægean Sea (Salonika). 4. It has a considerable coast-line on the Adriatic Sea.

The capital is **Belgrade,** situated at the junction of the Danube and the Sava. **Nis** is important because of its position at the junction of the two chief railway lines through the peninsula. **Salonika,** on the Ægean Sea, will probably be one of the chief outlets for the produce of Yugoslavia. Although the port is in Greece, part of the harbour will be reserved for Yugoslavia, and this country is also guaranteed the use of the railway between the frontier and Salonika.

ALBANIA. After the war in the Balkan Peninsula (1912 to 1913) a new state was carved from the Turkish Empire. Albania resembles Montenegro in many respects. It is traversed by high, folded mountains, running in parallel ranges. Among the mountains are rich pasture lands and fertile valleys, but they are not cultivated as they might be. The inhabitants are mostly half-civilised mountaineers living constantly under arms, and in a state of chronic feud with their neighbours. The provisional capital is Tirana, though the chief town is **Scutari,** near the northern frontier. Albania is now an independent kingdom, and a member of the League of Nations.

BULGARIA. Bulgaria extends on both sides of the Balkan Mountains, through which a number of fairly low passes make communication between the two sides comparatively easy. North of the Balkans the climate is extreme, but the hot, dry summers are good for **wheat** and **maize**, which are largely grown there. The lowlands south of the Balkans are very fertile, and produce **tobacco**, **wine**, and **silk**. **Roses** are grown for the manufacture of attar of roses. The capital is **Sofia**, situated in a fertile lowland at the crossing of important routes. **Ruschuk**, on the Danube, and **Varna**, on the Black Sea, are the principal ports. At the last Balkan War Bulgaria was successful in pushing its frontier to the Ægean Sea, but after the Great European War it had to give up this coastal strip again.

TURKEY IN EUROPE. Turkey in Europe is a mere fragment of what it once was. Before the last Balkan War the empire stretched from the Adriatic to the Black Sea and from Bosnia in the north almost to the Gulf of Corinth in the south. Not much was left of European Turkey after the Balkan Wars, and now by the loss of Thrace (to Greece) after the Great War the Sultan's dominions in Europe have shrunk to a small area about Constantinople. Turkey is still of great importance, however, for the narrow straits of the **Bosporus** and the **Dardanelles** command the entrance to the Black Sea. The straits in future will be under international control. The country is very fertile in many parts, and there are valuable mineral deposits, but the resources are not developed. The chief occupations are **agriculture** and **cattle-rearing**, both of which are carried on by very primitive methods. The chief productions are wheat and maize, tobacco, silk, cotton, wines, and olives. There are manufactures of attar of roses and carpets.

The chief town, **Constantinople**, on an inlet of the Bosporus called the Golden Horn, stands at the end of the main route from Europe to the East; it is at the entrance of a narrow strait, through which all the shipping trade of the Black Sea must pass. Its position, therefore, makes it an important commercial centre. Of the many

mosques, the finest is that of St Sophia, once a Christian cathedral. Including the suburbs, the city contains about a million inhabitants.

GREECE. Greece is almost cut in two by the approach to each other of the **Gulf of Corinth** on the west, and the **Gulf of Ægina** on the east. The narrow Isthmus of Corinth is cut across by a **ship canal** just over three miles long. Most of the interior is mountainous. In the north-east the peaks of the dissected plateau reach a height of nearly 10,000 feet in **Mount Olympus**, the fabled dwelling-place of the Greek gods. North of the Gulf of Corinth the folded mountains attain a height of 8000 feet in **Mount Parnassus.** Agriculture is carried on in the plains that are found here and there encircled by high ground. All the large towns are situated near these plains, the most important of which are the plain of **Thessaly** and the plain of **Attica.** The chief products are olives, wine, tobacco, and fruit, especially **currants.** In recent years the **marble** industry has become important, some of the Greek marbles ranking among the finest in Europe. **Sponges** are obtained from the surrounding seas. Owing to the mountainous nature of the land, the commerce of Greece is carried on chiefly by sea. Greek boats take a large share of the trade of the eastern Mediterranean.

In the fertile plain of Thessaly are the rapidly rising towns of **Trikkala**, and the seaport of **Volo. Athens**, the capital, is famous for its historical associations. Six miles away is **Piræus**, the port of Athens, situated on the Gulf of Ægina. **Patras**, at the entrance to the Gulf of Corinth, is a seaport which exports large quantities of currants. Of the island towns, **Corfu** and **Syra** are the most important. **Salonika** stands at the end of one of the two great railway-routes across the Balkan Peninsula. It focuses the trade of the fertile Vardar valley, and is an outlet for the produce not only of Greece but of Yugoslavia. After the Great War, Greece obtained most of the province of Thrace at the expense of Turkey. The chief city of Thrace is **Adrianople**, which is situated where the Maritsa becomes navigable, and at a point to which several of the Balkan passes converge.

PEOPLE OF THE BALKAN PENINSULA. In the Balkan Peninsula there is a greater mixture of races, languages, and religions than in any other part of Europe. This tends to keep alive political rivalry and religious hatred, and the balance between the different states is kept only by the influence of the great nations of Europe. The people of Yugoslavia and Bulgaria are **Slavs**, the **Turks** are congregated chiefly round Constantinople, while the south of the peninsula and the off-lying islands are inhabited by **Greeks**. In the mountains of the west are the **Albanians**, and in almost all the large towns there are numerous **Jewish** and **Armenian** merchants.

THE MEDITERRANEAN STATES OF AFRICA.

Part of the north-west of Africa, from the Gulf of Gabes on the east to the termination of the Atlas Mountains on the west, is more

FIG. 25.—The Mediterranean States of Africa.

allied to Europe in all respects than to the rest of Africa. The structure of the land, the climate, the vegetation, and the animals are similar to those of the Mediterranean coasts of Europe. The

political states included in this region are **Morocco**, **Algeria**, and **Tunisia**.

RELIEF. We have learned that the folded mountains of Europe send a branch through Italy and Sicily into Africa. In Africa the ranges are known generally as the **Atlas Mountains**. The land rises from the coast into the ranges of the Northern or **Little Atlas**. This is a well-watered and fertile belt containing rich valleys, and is generally known as the **Tell**. Behind the Tell the land sinks again into the region of the **High Plains**, a series of terraces from 3000 to 4000 feet above sea-level. These contain numerous basins of internal drainage, with tracts of sand and salt lakes, or **shotts**, that frequently dry up in summer. The High Plains are bounded on the south by the ranges of the Southern Atlas, known in Morocco as the **Great Atlas**, which in the west rise to a height of over 14,000 feet. The highest peaks are covered with perpetual snow. South of the Great Atlas the land drops rapidly to the vast plains and plateaus of the Sahara Desert.

CLIMATE AND PRODUCTIONS. The climate of Tunisia, Algeria, and Morocco is similar to that of the countries of Europe that border the Mediterranean. The fertile parts of the Tell form splendid **grain**-growing districts. Algeria is rapidly becoming a great **wine**-producing country, and in Tunisia the finest **olives** in the world are grown. On the High Plains **esparto-grass** is the most valuable crop, and there are extensive pasture-lands suitable for rearing **sheep** and **goats**. The **cork-oak** is the most important tree, and in recent years the export of **early potatoes** has proved a profitable business. There are valuable mineral deposits, but the only one yet worked is **iron-ore**, which is exported from Algeria.

MOROCCO. Morocco is nominally an independent empire, governed by a Sultan. Although the natural resources of the country are great, they are quite undeveloped. Before the French took control of the country in 1912, there were no railways and no proper roads. These are now being rapidly constructed. The port of Morocco is Mogador. The largest seaport is **Tangier**, where the proportion of Europeans is greatest. There are some manufactures of **leather**.

ALGERIA. Under French rule the resources of Algeria have been largely developed. Hundreds of miles of **railways** and thousands of miles of **splendid roads** have been constructed. New land has been brought under cultivation by the sinking of numerous **wells.** European colonies have been planted in different parts of the country. Large quantities of **wine, esparto-grass, grain, tobacco, cork,** and **iron-ore** are exported. Nine-tenths of the total trade of the country is with France. The capital, **Algiers,** has a fine harbour, and is used as a coaling-station for the Mediterranean trade. The chief port of the west is **Oran,** almost as large as Algiers, and connected with it by rail. Of the inland towns, Constantine is the largest.

TUNISIA. Tunisia is a French Protectorate, and, like Algeria, its resources are being well developed. The hilly but fertile region of the Tell extends from Algeria into Tunisia. There is a second strip of fertile ground called the **Sahel,** a stretch of low ground bordering the coast of Tunisia and running south from Cape Bon. The productions are **olive oil, grain, esparto-grass, cork,** and **dates.** The mining of **phosphates** is becoming increasingly important. There are some manufactures of silk and carpets. The capital is **Tunis,** separated from the sea by a shallow lagoon, through which a ship canal has been cut. On the north coast, **Bizerta** is a strong naval station.

ASIA

GENERAL OUTLINE

Asia forms by far the larger part of the great land mass known as Eurasia, of which Europe is the western prolongation. The north-east part of the continent is within 36 miles of America. Asia is the **largest** of all the continents. In an east and west direction it stretches for 6000 miles, and from north to south it extends for over 5000 miles.

RELIEF. Look at the orographical map that faces p. 120. It is plain that Asia consists of four main divisions :—

1. **The Northern Plains.** The Northern Plains extend in a north-easterly direction from the Caspian Sea, across Turkistan and Siberia to the Arctic Ocean. Round the Caspian Sea they are **below sea-level**, but in parts of Siberia they are between 1000 and 2000 feet above sea-level.

2. **The Asiatic Mountain System.** The most important of the mountains of Asia are **folded ranges**, that are really continuations of the Alpine folds of Europe. In the north-east, however, the highlands have the structure of fairly **even tablelands**, and in other parts of much **dissected plateaus**. The course of the chief lines of folding should be traced on the map. The northern line begins in the **Caucasus**, which reappears to the east of the Caspian Sea as the **Kopet Dagh**. From Asia Minor the **Pontic Mountains** and the **Taurus** run eastward, to unite in the **Armenian Plateau**. From Armenia the line passes to the south of the Caspian Sea as the **Elburz Mountains**, the highest point of which is the volcanic peak of **Demavend**, about 19,000 feet above sea-level. The Elburz ranges unite with the Kopet Dagh, and the folds pass through the north of

Afghanistan, where they form the mighty **Hindu Kush.** A southern branch runs parallel to the Persian coast in a long curve called the **Persian Loop,** which encloses two basins of inland drainage, the **Plateau of Iran** and the **Plateau of Seistan.** This loop turns to the north as the **Suliman Mountains,** and finally joins the Hindu Kush in the high plateaus of the **Pamir,** or "Roof of the World," the greatest mountain-knot on the globe.

From the Pamir the mountain-chains run to the east in two main systems. Tibet is bounded on the south by the **Karakoram Mountains,** which run into the **Himalaya,** the loftiest mountain system in the world, with the gigantic **Mount Everest,** rising 29,000 feet above the sea. To the east of the Brahmaputra valley this line bends back to the south-west, and then runs out to sea in Burma. The volcanic Andaman Islands and Nicobar Islands probably mark the continuation of this line. The other main line of folding runs to the east into Tibet as the **Kwen-lun Mountains.** The same line can be traced far to the north-east in the **Inshan Mountains** and the **Khingan Mountains.** North of the Kwen-lun Mountains the land falls very rapidly to the **Tarim Basin,** which at the lake of Lop Nor is not much more than 2000 feet above sea-level. This depression rises and widens to the north-east, forming the **Desert of Gobi,** the surface of which is about 4000 feet above the sea. The Tarim Basin is bounded on the north by the **Tien Shan Mountains,** while farther north the direction of the ranges is altered in the **Altai Mountains,** which run from north-west to south-east. North-east of the Desert of Gobi there is a rugged mountainous tract having the structure of a dissected plateau. The highlands are known as the **Yablonoi Mountains** and the **Stanovoi Mountains.**

The east of Asia descends in great steps or terraces to the sea. Notice that all along the east coast of Asia there is a series of festoons or **loops of islands,** partially enclosing a number of seas. These seas have probably been formed by subsidence, and the chains of islands represent the original coast-line before fracturing and submergence took place inside this line. It is interesting to note that all along this line **earthquakes and volcanic eruptions** are

of frequent occurrence, again illustrating the connection between these phenomena and the fracturing and foundering of the earth's crust.

3. **The Southern Valleys.** The system of Southern Valleys begins in the west, with the low ground bordering the valleys of the **Euphrates** and **Tigris**, and runs out to sea about the Persian Gulf. The valley system then passes up the **Indus**, and down the **Ganges** to the Bay of Bengal.

4. **The Southern Plateaus.** South of the valley system are the plateau of **Arabia**, the plateau of India (or the **Deccan**), and the plateau of the **Malay Peninsula.** These at one time formed part of a continuous land that stretched from Africa across the Indian Ocean to Australia.

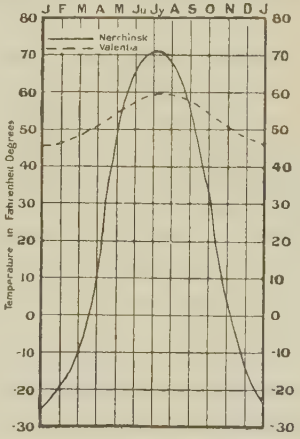

FIG. 26.—Curves showing the Temperature throughout the year at Valentia and Nerchinsk.

CLIMATE. 1. Temperature. Most of the interior has a typically **continental** climate, with great **extremes of temperature.** Fig. 26 shows this clearly; the curves represent the mean temperature throughout the year at Valentia, south-west of Ireland, and Nerchinsk, in the south of Siberia, both places being in the same latitude. In winter-time a part of Siberia is probably the **coldest** place on the face of the earth.

2. **Rainfall.** The rainfall over much of the interior is very small, and therefore there are large areas of barren, sandy deserts. In some places near the coast the rainfall is remarkably heavy. On the slopes of the Khasi Hills in India, north of the Bay of Bengal, a rainfall of **six hundred inches** has been recorded in one year. Contrast this with the rainfall of London, about twenty-five inches per annum.

3. Winds. The south and east coasts of Asia have a well-marked **monsoon** climate. During the summer the winds blow from the sea towards the heated interior, while in the winter the directions of the wind are reversed, and they blow out from the land. See Figs. 28 and 29. In spring and autumn, at the "change of the monsoons," the weather is very uncertain, and there frequently occur violent hurricanes, known as **typhoons.**

VEGETATION ZONES. Just as in Europe, we can trace in Asia a series of belts in which the vegetation is different, and the nature of which depends chiefly on the climate. In the arctic regions of Asia there is the belt of the **Tundras**, quite similar to the Tundras of the north of Europe. This is succeeded, as in Europe, by a belt of **coniferous forests**, which gradually passes into the **deciduous forest** zone. This is followed by the grassy plains of the **steppes.** Whenever the rainfall is sufficient, or irrigation is practised, this is a region of great fertility, yielding splendid fruits and grain. Where the rainfall is scanty the steppes gradually pass into the **deserts**, which occupy a large proportion of the interior of Asia. In the south, near the tropics, the rainfall is generally heavy, and there are dense **jungles** in which the undergrowth is particularly rank, or great **tropical forests**, like those of Burma, which contain valuable timber.

ANIMALS. Asia may be divided broadly into two regions, the animals of which show marked differences. The boundary between the two regions is formed by the Himalaya and its continuations. These gigantic mountain-ranges form a barrier across which animals cannot pass. The southern region includes India, Indo-China, Sumatra, and Java, and its typical animals are the tiger, the elephant, the rhinoceros, and the tapir. In the north, the camel, the wild horse, the wild ass, the reindeer, and many species of sheep are a few of the most characteristic animals.

PEOPLE. The inhabitants of Asia belong to three main groups: the **Mongolian**, or Yellow Race; the **Caucasian**, or White Race; and the **Negro**, or Black Race. By far the greatest number are Mongolians, who include the Chinese, the Japanese, the Burmese, and the

numerous tribes of northern and western Asia. The Caucasians include the Indians, the Persians, and the Semitic tribes of Syria. It is estimated that more than half of the whole human race live in Asia.

TURKEY IN ASIA.

Before the Great War, the Asiatic possessions of Turkey included Asia Minor, Syria, Palestine, Mesopotamia (Iraq), and much of the coast of Arabia. Most of this now consists of spheres of influence under Britain, France, and Italy. Palestine and Mesopotamia are administered by Britain under the League of Nations. The new Arab Kingdom of Hejaz includes most of the Arabian coast of the Red Sea. Syria is now a federation of states under the mandate of France. Armenia became independent in 1918.

ASIA MINOR. Asia Minor consists of a **plateau** that gradually rises from the west to an altitude of 6000 feet in Armenia. The plateau is bordered with mountains. In the north the **Pontic Mountains** run parallel to the coast of the Black Sea. In the south the **Taurus Mountains** in places reach a height of 10,000 feet. The range is continued by the **Anti-Taurus**, which run north-east into the mountain-knot of Armenia. In Armenia the lofty volcanic peak of **Mount Ararat** rises to a height of 17,000 feet. Many of the rivers are large, but they break through the mountain-barriers in rocky gorges, and are therefore of little use for navigation.

Round the west coasts the **climate** is like that of other parts of the **Mediterranean.** In the interior it is much more **extreme.** As a rule, where the rainfall is sufficient or where irrigation is practised, the land is very fertile.

Large quantities of **wheat** are grown on the plateau. In the valleys, **fruit** (particularly figs and raisins), **cotton, opium,** and **tobacco** are grown. On the pasture-land of the plateau large herds of sheep and goats are reared, that furnish the raw material of manufactures of **carpets** and **cloth.** The wool of the Angora goat (mohair) is famous for its soft, fine, silky appearance.

The largest town is **Smyrna,** which possesses a good harbour, and

exports most of the produce of Asia Minor. **Trebizond**, on the Black Sea, exports its goods to Europe mainly via Constantinople, and is also the starting-point of a trade-route to Mesopotamia and Persia. **Brusa** is a finely situated town with silk manufactures; and **Erzerum**, the chief town of the East, is a strongly fortified

FIG. 27.—Asia Minor, Syria, and Palestine.

military station. There are valuable **sponge-fisheries** round the coasts. **Cyprus**, the most easterly island, is a British possession.

SYRIA AND PALESTINE. Syria consists of a **tableland bordered by hill-ranges** running parallel to the coast. The highest part of the western ridge is formed by the **Mountains of Lebanon** (over 10,000

feet), while in the east the range is known as the **Anti-Lebanon**, and is nearly as high. Bordering the sea is a **coastal plain**, narrow in the north and widening to the south. The most remarkable feature of the country is a **rift-valley**, which runs south into the Gulf of Akaba and is continued by the Red Sea. In this valley flow the **Orontes**, the **Leontes**, and the **Jordan**. The Jordan flows south, expands into the **Sea of Galilee**, and then flows into the **Dead Sea**. The Dead Sea is a salt lake the surface of which is over a thousand feet below sea-level.

The products of Syria are similar to those of other Mediterranean lands. **Silk**, **tobacco**, **oranges**, and **olives** are important. The local supply of the necessary materials (oil and alkali) makes **soapmaking** a characteristic industry. On the plains **wheat** is grown, and on the pastures of the plateau large flocks of **sheep** are kept.

The largest town is **Damascus**, surrounded by rose-gardens and connected with the chief port, **Beirut**, by a road and a railway. In the north, **Alexandretta** (Iskanderun) is the port of **Aleppo**, which has long been an important centre of caravan routes. In the south, **Jerusalem** is interesting, because of its historic associations. Its port is **Jaffa**, noted for its oranges.

MESOPOTAMIA (IRAQ). Mesopotamia includes the basins of the **Euphrates** and **Tigris**. From the junction of these rivers to the Persian Gulf the combined stream is called the **Shatt al Arab**. The southern part of the district is entirely dependent on **irrigation**. **Grain**, **dates**, **wool**, and **gum** are the chief products.

Ocean-going steamers can ascend to **Basra**, on the Shatt al Arab. The town exports dates. The river-steamers ascend to **Baghdad**, on the Tigris, a great centre of caravan routes. Since the occupation of the country by the British during the war, hundreds of miles of roads and railways have been made, a large fleet of steamers has been built, docks have been constructed at Basra, and extensive irrigation schemes have been carried out.

ARABIA. Most of Arabia consists of a massive **tableland**, the edge of which is generally rugged and mountainous. In the south, some of the peaks are over 10,000 feet in height. In the centre of

the country is **Nejd**, a grassy, pastoral plateau with numerous oases where date-palms flourish. It is practically surrounded by barren deserts.

The most fertile district is **Yemen**, in the south-west, where there is an ideal climate for **coffee**. The **date-palm** is found all over the country. In Nejd the finest of the famous Arabian **horses** are bred, while **camels** and **dromedaries** are also important. The handsome white **donkeys** of Arabia are much in demand in Egypt and Turkey. On the east coast the **pearl-fisheries** of the Persian Gulf are valuable.

The Arab **Kingdom of Hejaz** proclaimed its independence of Turkey in 1916. It stretches southwards from Syria along the coast of the Red Sea until it meets Yemen. Most of the inhabitants are Bedouins. The chief town of Hejaz is **Mecca**, which lies about 50 miles from the shores of the Red Sea. It was the birthplace of **Mahomet**, and owes most of its importance to the great pilgrimages that are made to it every year. Its port is **Jidda**.

In the south-west of Arabia there is the important British settlement of **Aden**. The town is situated in a hollow that was once the crater of a volcano. The district is barren, and throughout most of the year the heat is almost unbearable. The town is very strongly fortified, and is an important **coaling-station** and port of call for vessels passing through the Red Sea.

PERSIA.

Most of Persia consists of an extensive **tableland**, crossed by **folded mountain-chains**. In the north the **Elburz Mountains** rise to a height of about 19,000 feet, in the great volcanic pile of **Demavend**. The **Persian Loop** runs parallel to the south coast.

There are two basins of inland drainage on the Persian plateau. The west is the **Basin of Iran**, and the east is the **Basin of Seistan**, which extends into Afghanistan. There is only one navigable river, the **Karun**, which flows into the same delta as the Shatt al Arab.

ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
EUROPE
RUSSIA
PLAIN
MEDITERRANEAN SEA
BLACK SEA
CASPIAN SEA
Aral Sea
Kara Sea
Lake Baikal
Lake Balkash
Lake Van
Lake Urmia
Lake Tiberias
Dead Sea
Lake Hamun
Lake Hamun-i-Mashkel
Lake Gaubkhana
Lake Hamun-i-Helmund
Lake Kamaran
Lake Hanish
Lake Dahlak
Lake Assal
Lake Abbe
Lake Rudolf
Lake Stefanie
Lake Tsana
Lake Tana
Lake Victoria Nyanza
Lake Albert Nyanza
Lake Albert Edward Nyanza
Lake Kioga
Lake Tanganyika
Lake Kivu
Lake Mweru
Lake Bangweolo
Lake Nyassa
Lake Shirwa
Lake Rukwa
Lake Ngami
Lake Chad
Lake Tsad
Lake Fittri
Lake Leopold II
Lake Tumba
Lake Kisale
Lake Upemba
Lake Dilolo
Lake Mai-Ndombe
Lake Kamalondo
Lake Kisale
Lake Bangweolo
Lake Mweru
Lake Kivu
Lake Albert Edward Nyanza
Lake Albert Nyanza
Lake Victoria Nyanza
Lake Tana
Lake Tsana
Lake Rudolf
Lake Stefanie
Lake Abbe
Lake Assal
Lake Dahlak
Lake Hanish
Lake Kamaran
Lake Hamun-i-Helmund
Lake Gaubkhana
Lake Hamun-i-Mashkel
Lake Hamun
Lake Urmia
Lake Van
Lake Tiberias
Dead Sea
Lake Balkash
Lake Baikal
Kara Sea
Aral Sea
Caspian Sea
Black Sea
Mediterranean Sea
Red Sea
Persian Gulf
Gulf of Aden
Gulf of Oman
Gulf of Cambay
Gulf of Manaar
Arabian Sea
Bay of Bengal
Laccadive Islands
Maldive Islands
C. Comorin
Arctic Circle
Equator
Tropic of Cancer
Greenwich
Longitude East
Nejd
TABLE LAND OF ARABIA
Arabian Desert
Nefud Desert
Dahna
Rub'al Khali Desert
Great Salt Desert
Lesser Salt Desert
Kavir
Dasht-i-Lut
Registan
Hamun
Plateau of Iran
Highlands of Asia Minor
Taurus
Anti-Taurus
Armenian Highlands
Kurdistan
Elburz Mts
Zagros Mts
Hindu Kush
Himalaya Mts
Plateau of Tibet
Plateau of Deccan
Western Ghats
Eastern Ghats
Vindhya Mts
Satpura Mts
Aravalli Mts
Sulaiman Mts
Kirthar Mts
Makran
Khorasan Mts
Caucasus Mts
Ural Mts
Ural R.
Volga R.
Don R.
Dnieper R.
Danube R.
Rhine R.
Euphrates R.
Tigris R.
Nile R.
Indus R.
Ganges R.
Brahmaputra R.
Irrawaddy R.
Salween R.
Mekong R.
Yangtze Kiang R.
Hwang Ho R.
Amur R.
Lena R.
Yenisei R.
Ob R.
Irtish R.
Syr Darya R.
Amu Darya R.
Helmund R.
Karun R.
Shatt-el-Arab R.
Jordan R.
Nile R.
Congo R.
Niger R.
Zambesi R.
Limpopo R.
Orange R.
Murray R.
Darling R.
Murrumbidgee R.
Lachlan R.
Macquarie R.
Namoi R.
Gwydir R.
Barwon R.
Darling R.
Murray R.
Orange R.
Limpopo R.
Zambesi R.
Niger R.
Congo R.
Nile R.
Jordan R.
Shatt-el-Arab R.
Karun R.
Helmund R.
Amu Darya R.
Syr Darya R.
Irtish R.
Ob R.
Yenisei R.
Lena R.
Amur R.
Hwang Ho R.
Yangtze Kiang R.
Mekong R.
Salween R.
Irrawaddy R.
Brahmaputra R.
Ganges R.
Indus R.
Nile R.
Euphrates R.
Tigris R.
Rhine R.
Danube R.
Dnieper R.
Don R.
Volga R.
Ural R.
Ural Mts
Caucasus Mts
Khorasan Mts
Makran
Sulaiman Mts
Kirthar Mts
Aravalli Mts
Vindhya Mts
Satpura Mts
Western Ghats
Eastern Ghats
Plateau of Deccan
Plateau of Tibet
Himalaya Mts
Hindu Kush
Elburz Mts
Zagros Mts
Armenian Highlands
Kurdistan
Taurus
Anti-Taurus
Highlands of Asia Minor
Plateau of Iran
Hamun
Registan
Dasht-i-Lut
Kavir
Great Salt Desert
Lesser Salt Desert
Rub'al Khali Desert
Nefud Desert
Dahna
Arabian Desert
Nejd
TABLE LAND OF ARABIA
NOTE TO COLOURING
12000 Feet
6000
3000
1500
600
SEA LEVEL
100 Fathoms
ASIA
OROGRAPHICAL
English Miles
0 200 400 600 800 1000
60 70 0 20 40 60
70 40 50 60 70 Longitude East

PACIFIC OCEAN
BERING SEA
SEA OF OKHOTSK
SEA OF JAPAN
JAPAN
YELLOW SEA
EAST CHINA SEA
SOUTH CHINA SEA
Celebes Sea
Sulu Sea
Banda Sea
BAY OF BENGAL
INDO CHINA PENINSULA
PHILIPPINE ISLANDS
BORNEO
MONGOLIAN PLATEAU
Tropic of Cancer
Bering Strait
Kamchatka
Sakhalin
Japan
China
Formosa
Luzon I
Mindanao I
Cambodia
Nicobar Is
Andaman Is
Java
Sumatra
Celebes
Banka
Singapore
Malacca Strait
Gulf of Siam
Isthmus of Kra
Hainan
Shanghai
Manila
Samar
Mindoro
Palawan
Sulu Archipelago
Amur R.
Yenisei R.
Lena R.
Yangtze Kiang
Hoang Ho
Mekong R.
Irrawaddy R.
Brahmaputra R.
Ganges R.
Indus R.
Tarim R.
Gobi
RAINLESS DISTRICT
Plateau of Tibet
Himalayas
Kuen Lun Mts
Thian Shan
Altai Mts
Yablonoi Mts
Stanovoi Mts
Verkhoyansk Mts
Sea of Aral
Lake Baikal
Lake Tali-Nor
Lake Tengri Nor
Lake Kuku Nor
Lake Hamun
Lake Yamdok
Lake Manasarowar
Lake Balkash
Lake Issikul
Lake Aibi
Lake Dalai
Lake Kossogol
Lake Baikal
Tsaidam
Kashgar
Yarkand
Khotan
Lhasa
Tashkend
Bokhara
Samarkand
Irkutsk
Yakutsk
Verkhoyansk
Omsk
Tobolsk
Barnaul
Semipalatinsk
Urga
Kiakhta
Peking
Nanking
Hankow
Canton
Macao
Hong Kong
Formosa Strait
Korea Strait
Tsushima
Kyushu
Hokkaido
Kuril Islands
Aleutian Islands
Commander Is
Copper Mts
Vitim Plateau
Stanovoi Range
Khingan Mts
Nan Ling
Yun Ling
Kuen Lun Mts
Himalayas
Karakoram Mts
Hindu Kush
Elburz Mts
Caucasus Mts
Ural Mts
Kirghiz Steppe
Gobi Desert
Taklamakan Desert
Kara Kum Desert
Kara Kum
Kizil Kum Desert
Kizil Kum
Thar Desert
Great Indian Desert
Deccan
Ghats
Malabar Coast
Coromandel Coast
Ceylon
Maldive Is
Laccadive Is
Andaman Sea
Gulf of Martaban
Irrawaddy Delta
Ganges Delta
Sundarbans
Bay of Bengal
Arabian Sea
Persian Gulf
Red Sea
Gulf of Aden
Gulf of Oman
Strait of Hormuz
Strait of Malacca
Java Sea
Timor Sea
Arafura Sea
Gulf of Carpentaria
Torres Strait
Coral Sea
Great Barrier Reef
Tasman Sea
New Zealand
Australia
Tropic of Capricorn
Equator
Greenwich
Bering Strait
Behring Sea
Sea of Okhotsk
Sea of Japan
Yellow Sea
East China Sea
South China Sea
Celebes Sea
Sulu Sea
Banda Sea
Arafura Sea
Timor Sea
Coral Sea
Tasman Sea
Great Barrier Reef
Torres Strait
Gulf of Carpentaria
Gulf of Martaban
Gulf of Siam
Gulf of Oman
Persian Gulf
Red Sea
Gulf of Aden
Strait of Hormuz
Strait of Malacca
Java Sea
Timor Sea
Arafura

The structure of the country renders communication difficult, and most of the trade of the country is carried on by means of **pack animals.**

Much of the interior has a very scanty rainfall, parts of the plateau having less than 10 inches per annum. Large areas therefore consist of bare steppe-land or of desert. Where irrigation is practised, the country is very fertile. The water in many cases is brought from the mountains in underground canals. Rain is plentiful on the shores of the Caspian Sea, and here are found the only districts that are densely forested. The chief productions are **fruits, opium, silk, gums, tobacco,** and **medicinal plants.** The plentiful supply of wool has led to the manufacture of the famous Persian **carpets** and **shawls.** There is a fair amount of carving, inlaying, and artistic metal-working. **Pearls** are obtained in the Persian Gulf, and **turquoises** are found in the north-east. The rearing of **live stock** is very important, the horses of Persia having long been famous. In recent years **petroleum** has become a valuable export.

Tehran, the capital of Persia, is situated on a plain at the foot of the Elburz Mountains. The most important commercial town in Persia, and the second in size, is **Tabriz,** in the north-west of the country. The former capital of Persia, **Isfahan,** stands on a fertile plain almost in the centre of the country. The chief port is **Bushire,** on the Persian Gulf.

AFGHANISTAN.

Afghanistan forms the eastern part of the great **plateau of Persia.** It rises from the Seistan Basin in the west to a height of over 7000 feet in the east. The plateau is crossed by great mountain-chains, of which the loftiest is the system of the **Hindu Kush,** rising to heights of 20,000 to 25,000 feet above the sea. The country is extremely **difficult of access.**

In summer the country is scorched by the fierce glare of the sun, while in winter frost and snow and bitter winds prevail. In the few

places where irrigation is possible the land is fertile, and produces crops similar to those of Persia. The River **Helmand** runs south-west across the country, to lose itself finally in the swamps of Seistan, on the Persian borders. The **Kabul** River breaks through the mountain barrier on the east in a precipitous gorge, and joins the Indus.

Although the country is of little value commercially, it is of great importance **politically**, for it is one of the frontier states of India, and forms a **buffer-state** between India and Asiatic Russia. The routes into India are therefore of great importance. The chief route has always been by the **Khyber Pass.**

The capital of Afghanistan is **Kabul**, a place of great strategic importance, and the centre of the trading routes of the country. The valley of the Kabul River is richly cultivated, and is famous for its **fruits.** There is an arsenal in the town under European supervision, in which guns, rifles, and ammunition are made. A fine road connects Kabul to **Kandahar**, the chief commercial and strategic town of the south. **Herat**, the principal town of the west, lies in the centre of a well-irrigated and fertile district. The principal exports are **wool** and **dried fruits.**

BALUCHISTAN.

Baluchistan is a **tableland** separated from India on the east by mighty mountain-ranges. In summer it is one of the hottest parts of Asia, while in winter the weather is bitterly cold. Some of the valleys are very fertile, but the land as a whole is fitted only for the rearing of sheep, camels, and other live stock.

Baluchistan is important, because it commands one of the chief passes across the mountains into India, second in importance only to the Khyber route. This is the **Bolan Pass**, which leads from Quetta to the plains of the Indus. A railway now runs through this pass to Quetta, and then almost to the Afghan frontier. **Quetta, the chief town, is a military station.**

Baluchistan is nominally subject to the Khan of Khelat, but all

disputes are referred to Britain as arbitrator. The Khan receives an annual subsidy from the British Government. The northern part of the country, in which Quetta is situated, is called British Baluchistan and is administered directly by British officials.

INDIA.

RELIEF. There are three main divisions of India, according to structure. These are :—

1. **The Folded Mountains.** From the high tableland of the Pamir there runs south-east a series of mighty folded chains called the **Karakoram Mountains.** The greatest peak in this group is **Mt. Godwin Austen**, over 28,000 feet high. Almost as high, and even more impressive, is **Nanga Parbat**, which is not far short of 27,000 feet high, and is considered by some to be the most imposing mountain in the world. South of the Karakoram Range there begins the loftiest system of mountain-chains in the world, the **Himalaya.** This gigantic mountain barrier stretches for some 1500 miles, and has a width varying from 150 to 200 miles. Throughout this great system of ranges, valleys, and tablelands, one central, dominating ridge can be traced that contains all the highest peaks. **Mt. Everest**, the highest mountain in the world, rises from this ridge to a height of 29,000 feet.[1] A little to the east is **Kanchanjanga** (over 28,000 feet), not quite so high as Everest, but owing to its greater isolation, much more impressive. The Himalaya can be crossed at a few places during a short time in the summer, by passes varying in height from 17,000 to 20,000 feet above sea-level.

North of the Himalaya is one of the great water-partings of the world. In a small area in western Tibet rise the head-waters of the **Indus**, the **Ganges**,[2] and the **Brahmaputra.** Trace on the map the widely separating courses of these three rivers. It is a remarkable fact that all these rivers cut deep valleys right through the main

[1] The height of Mt. Everest is generally given as 29,002 feet. The most recent calculations of the Indian Survey assign to it a height of 29,141 feet.

[2] Strictly speaking, the head-stream called the Ganges rises south of the Himalaya, but the Gogra (Ghagra), which rises in Tibet, has claims to be considered the main stream.

chains of the Himalaya. This can be explained in two ways. The rivers may have flowed in their present positions before the Himalaya began to be raised up by pressure from the north, and may have been able to cut a passage through the range as fast as it was uplifted. It is possible also that the gorges may have been worn by the gradual backward cutting of the head-streams of these rivers. It is not certain which of these explanations is the true one.

2. **The Indo-Ganges Valley.** Look at the map facing p. 128, and it will be seen what a wide passage there is between the Indus and the Ganges that does not exceed 1000 feet above sea-level. This is the richest and most fertile part of India, and contains nearly four times the population of the United Kingdom.

3. **The Southern Tableland.** South of the valley belt the ground rises gradually into a plateau, called the **Deccan**, the broken northern edge of which is called the **Vindhya Range.** The plateau is highest in the west, where it rises in places to 8000 feet above sea-level, but slopes gradually to the east till it is only about 1000 feet above the sea. The steep and rugged western **escarpment** is called the **Western Ghats**, while the much lower eastern edge is called the **Eastern Ghats.** The steep southern escarpment of the plateau is called the **Nilgiri Hills.** Much of the plateau is composed of volcanic rocks, which decompose into a rich, black soil of great fertility.

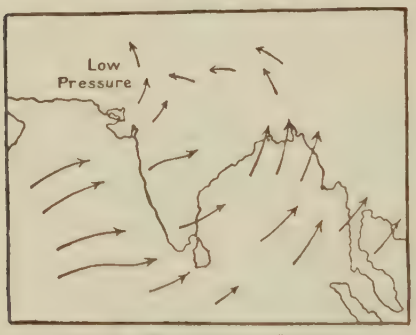

FIG. 28.—The South-west Monsoon.

Most of the rivers of the Deccan rise near its western edge, and flow into the Bay of Bengal. Of these the most important are the **Godavari** and the **Kistna.** The northern border of the tableland is drained by the **Narbada,** which flows west, and is one of the most sacred rivers of India.

CLIMATE. The weather throughout the year depends largely on the regular, seasonal winds called monsoons. In India the **south-west monsoon** lasts approximately from the beginning of June till the end of September. The warm, moist wind is forced by the Western Ghats and the other highlands to ascend into higher and colder parts of the atmosphere thus causing the moisture to condense as rain. Heavy rain, therefore, occurs on the west coast, and for some distance inland. The same process is repeated when the winds reach the Himalaya, and the rainfall on the lower slopes of these mountains is therefore excessively heavy. The existence in summer of an area of low atmospheric pressure over Baluchistan causes the south-west monsoon to be diverted up the Ganges valley, as a south or even a south-east wind in summer. As these winds come directly from the Bay of Bengal they deposit an enormously heavy rainfall on the slopes of the Khasi Hills in Assam.

The north-east wind of winter is really the normal trade-wind of these latitudes, although it is sometimes called the winter or north-east monsoon. The north-east wind brings moisture from the Bay of Bengal, and deposits it along the Eastern Ghats in winter.

Fig. 29.—The North-east Monsoon, or Normal Trade-Wind.

There is an area between the Indus and the Deccan where the monsoon is weak and the rainfall is consequently very scanty. This is the cause of the **Indian Desert** (Thar Desert) that lies to the south-east of the Indus. Throughout most of India the failure of the monsoon rains means anxiety to everyone, and death by starvation to many. Remember that when the monsoon is mentioned simply, it is always the south-west monsoon that is meant.

The year in India may be divided into **three seasons**: the **hot season**, from March to May; the **rainy season** of the monsoon, from June till September; and the **cool season**, during winter. It has already been mentioned that the change of the monsoon is often accompanied in eastern Asia by violent hurricanes.

MINERALS. Considerable quantities of **coal** are obtained, and in the last ten years the production has doubled. Ninety-five per cent. comes from Bengal. **Iron** is very plentiful, but it is not worked much, as it has been found difficult to compete against imported metal. One of the richest **gold**-fields in the world exists at **Kolar**, in the south of the Deccan, almost due west of Madras. **Mica** is one of the most characteristic of Indian minerals. It is found chiefly in Bengal and Madras. In the last few years India has come rapidly to the front in the mining of **manganese**, and it is now one of the leading exporters of that metal. **Salt** and **saltpetre** are produced in large quantities. In **Burma** two minerals are of prime importance, **petroleum** and **rubies**. The rubies are found in the north of Burma, and the petroleum along the valley of the Irrawaddy. In **Ceylon** numerous precious stones are found, of which the most important are **sapphires**. Large quantities of **graphite** are also exported from this island.

AGRICULTURE. Crops are obtained in India both in summer and in winter, although not generally from the same land. The chief **winter crops** are **wheat, linseed, tobacco**, and **opium**. The principal wheat district is the **Punjab**. In good years, India exports large quantities of wheat to this country. On the black lands of the Deccan, **cotton** is by far the most important crop. **Rice** is grown in the river valleys, since flooding of the fields is necessary for the growth of this crop. The chief centres are the lower Ganges valley and the lowlands of Burma. **Jute** is grown almost exclusively in the river valleys and deltas of Bengal. The upper Ganges valley produces considerable **opium** and **indigo**, although artificial indigo has lessened the importance of the latter. **Tea** requires a heavy rainfall, and is therefore grown on the moist slopes of the Himalaya, and particularly in **Assam** and **Bengal**. India is now the greatest

tea-producing country in the world. Of Indian timber the most valuable is **teak**, grown in the dense tropical forests of Burma. In some parts the **bamboo** is indispensable, not only for house-building, but for almost every domestic utensil. The large export of **hides** from India is explained by the fact that cattle are the chief beasts of burden in that country.

MANUFACTURES. India has long been famous for its **artistic manufactures.** Beautiful **carving**, exquisite **inlaying**, **metal-working** of every description, the making of the most **delicate fabrics** of silk and wool, are characteristic of the country; but these native manufactures are now disappearing before the cheap machine-made articles imported from Britain. The manufacture of goods by modern methods is rapidly growing. Great **jute factories** in Bengal and **cotton-factories** in Bombay are now competing successfully with the mills of Dundee and Lancashire. For example, in 1925-26 there were nearly 8½ million spindles and nearly 155,000 looms engaged in cotton spinning and weaving.

THE GANGES BASIN. **Calcutta** is situated on the **Hooghly**, one of the "distributaries" of the Ganges. Its position at the mouth of the richest valley in India makes it the greatest trading centre in the country. It is the second city of the British Empire in point of size, and, including the suburbs, has a population of over a million and a quarter. **Patna**, higher up the river, is a centre of **rice** and **opium** cultivation. **Benares** grew up where access to the sacred river Ganges was easy. It has thus become to the Hindus the **most holy** of Indian cities. It is a centre also of art-work in **metals**, particularly brass and silver. **Allahabad**, at the junction of the Ganges and the Jumna, is now one of the most important **railway centres** in the country. **Lucknow** and **Cawnpore** are of interest chiefly because of their associations with the Indian Mutiny. In addition, they are among the most progressive cities in India. **Agra**, on the Jumna, possesses one of the most beautiful buildings in the world, the famous **Taj Mahal**. In every town of this district, in fact, there are buildings of the greatest interest and beauty. Higher up the Jumna, just on the borders of the

Punjab, is **Delhi**, the ancient capital of the Afghan and Mogul emperors. In modern times it has prospered as a **wheat-market** and as a **railway centre**, and has recently been made the capital of India.

THE INDUS BASIN. **Karachi** stands on a bay to the west of the mouth of the Indus. It has a fine harbour, and exports the **wheat** of the Punjab. The capital of the Punjab is **Lahore**, surrounded with gardens, and now an important railway centre. Nearer the frontier is **Peshawar**, a military station that guards the Khyber Pass, the weakest point in the mountain bulwark of India. Across the Himalaya, but still drained by the Indus, is the state of **Kashmir**, which contains some of the most beautiful mountain and valley scenery in the world. **Srinagar**, on the Jehlam, is the capital, and the chief trading centre. **Weaving** and working in **metals**, for which the state has long been famous, are still carried on.

SEAPORTS. **Bombay**, the second town in India, has over a million inhabitants, and is the rival of Calcutta as a seaport. It is built on a small island which forms a safe harbour in all weathers. It exports most of the **cotton** of India. Factories for silk and cotton manufactures have recently been increasing in the town. Although **Madras** on the east coast is a centre of considerable trade, it has the great disadvantage of being situated on an open, unprotected coast, and thus its commerce is less than one-sixth of that of Bombay. **Rangoon**, on the delta of the Irrawaddy, exports most of the produce of Burma. The **oil** of the Irrawaddy valley is run by pipes into tank steamers, and then taken to the great refineries at Rangoon. **Rice** and **teak** are the other chief exports.

INLAND TOWNS. The **hill-stations** play a very important part in the life of Europeans in India. They are towns situated high enough up the mountains to have a cool climate and pure air even in midsummer. Every European who can do so spends the hot season at a hill-station. The most frequented hill-station is **Simla**, on the lower slopes of the Himalaya. In summer it is the residence of the Viceroy, and the seat of government. **Hyderabad** is the

INDIA OROGRAPHICAL

Bonne's Projection

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capital of the most important of the Deccan states. In size it is the fourth town of India, ranking after Madras.

CEYLON. A string of islands known as **Adam's Bridge** connects India with Ceylon. A railway runs part of the way across the islands. The south of Ceylon is mountainous, the best-known summit, **Adam's Peak**, being over 7000 feet high.

The island receives abundant rain from both monsoons. **Tea** is the most important product, having supplanted the coffee that used to be so largely grown. **Rubber** has been much grown in recent years and **coco-nut** products are exported. The gem-stones and graphite of the island have already been mentioned. The chief town is **Colombo**, on the south-west coast, which carries on practically all the traffic of the island. It is a calling-place for ocean-liners sailing to India, China, Japan, and Australia.

OTHER ISLANDS. The **Andaman Islands** and the **Nicobar Islands** are volcanic groups, that seem to mark the continuation out to sea of the folded mountain-chains running from the Himalaya through Burma. The Andamans are inhabited by Negritoes, a strange race, small in stature and black in colour. The islands were used until recently by India as a convict settlement. The Nicobars are inhabited by people of Mongol extraction, and produce **copra** (dried coco-nut) and **fibre.** The **Laccadive** and **Maldive** groups are coral atolls, the inhabitants of which live by fishing, and by their coco-nut palms.

THE MALAY PENINSULA.

The Malay Peninsula is formed by a **backbone of granite mountains**, running in a south or south-east direction, and attaining in places a height of 8000 feet. Politically, it is divided between Siam and Britain, for the **Straits Settlements** form a British colony, and the **Federated Malay States** are administered by a British official. The higher parts are densely forested, and yield **gutta-percha, coco-nut,** and **bamboo. Rice** is the chief crop of the low ground, although in recent years it has been giving place to **rubber,**

and **spices, tapioca**, and **pepper** are successfully cultivated. The most important product is **tin**. In recent years, the Malay Peninsula and the neighbouring islands have supplied **three-fourths of the world's tin**. The mining is mainly in the hands of Chinese. The animals are similar to those of India, and include the elephant, the rhinoceros, the tiger, the tapir, and many species of snakes.

The chief town is **Singapore**, on Singapore Island, at the extreme south of the peninsula. There is a good harbour for large vessels, and the town is now a seaport of the first rank, and a calling-place for ships of every nation. The port is a **coaling-station**, and has **shipbuilding** yards, and works for **smelting tin**.

SIAM.

Siam, a native kingdom, occupies the centre of the Indo-Chinese Peninsula, and includes a strip of the Malay Peninsula. The **Me Nam** flows through the centre of the kingdom, and is the most important river. The main stream and its tributaries form the chief thoroughfares of the country, and most of the people live along the river banks. Away from the valleys the country is mountainous, some of the peaks rising 7000 feet above sea-level.

The chief crop is **rice**, of which large quantities are exported. **Teak** is obtained from the forests, and **tin** is mined in the Malay Peninsula. The capital is **Bangkok**, on the Me Nam, a town that has electric tramways and well-paved streets, and is lit by electricity. Trade with Europe and China is indirectly carried on through Singapore and Hong-Kong.

FRENCH INDO-CHINA.

French Indo-China comprises the provinces of **Tongking**, **Annam**, **Cambodia**, and **Cochin-China**, the total area of which is somewhat greater than that of France. The country falls naturally into three divisions. Tongking in the north consists chiefly of the lower basin of the **Red River** (Song-ka), Cambodia and Cochin-China comprise the lower basin of the **Mekong**, while, between these territories,

Annam interposes a long, narrow band of **mountainous** country. The only parts that are well developed and densely populated are the two great **deltas** of the Red River and the Mekong.

By far the most important crop is **rice.** In the mountains there are forests of **teak**, but so far they have been scarcely touched. Under French rule, however, the resources will probably be rapidly developed. **Saigon** is the capital of Cochin-China, and the **chief seaport** of the whole French territory. It exports **rice** largely. The capital of Tongking is **Hanoi**, on the delta of the Red River. The modern town has been laid out by the French with great care, and is probably the best-planned, the most sanitary, and the healthiest town in tropical Asia. From Hanoi, communication is being rapidly opened with the interior.

THE CHINESE REPUBLIC.

[China Proper, Manchuria, Mongolia, Eastern Turkistan, Tibet.]

CHINA PROPER.

RELIEF. The Chinese Republic is over four million square miles in area, but by far the most important part of it is China Proper, the area of which is about one and a half million square miles. It is well marked off from the surrounding countries by natural boundaries. From the map of Asia, it will be seen that the **west** and **south** of China are **mountainous**, while, to the **north-east**, there are two areas of **low ground.** The northern plain is much the larger of the two, and extends from the mountains north of Peking to the belt of high ground north of the Yangtze-kiang.[1] It is broken by the hilly **Shantung Peninsula**, that separates the Yellow Sea from the Gulf of Pechihli. The smaller plain to the south consists chiefly of the basin of the Yangtze River.

1 A number of Chinese place-names will be better understood if the following equivalents are remembered:—kiang or ho = river, pe = north, nan = south, shan = mountains.

The northern plain and the valleys of the northern mountains are covered with a yellow soil called **loess**. It is porous in character, and is extremely **fertile**. The south-west of China bordering on Burma and Tongking is a high tableland. In the extreme south of China there is a third area of low ground, not so extensive as the other two. It consists chiefly of the basin of the **Si-kiang**, and is separated from the Yangtze basin by a broad belt of mountainous country known generally as the **Nan-shan**.

CLIMATE. China illustrates very well the important principle that the **east** of a continent is generally **more extreme**, and on the whole much **colder** than the **west**. The summers are generally hot, and the winters cold. Thus Peking is in the same latitude as southern Italy, yet its winters are colder than those of the west coast of Norway within the Arctic Circle. The second main factor determining the climate of China is that it is a **monsoon country**. As in India the monsoon brings rain, and the combination of **warm** and **wet summers** helps to explain the extraordinary productiveness of many parts of China.

RIVERS. In the north the **Pei-ho** flows into the Gulf of Pechihli. The two greatest rivers of China are the **Hwang-ho** and the **Yangtze-kiang**. The Hwang-ho or Yellow River rises in Tibet and flows north-east, making a great bend round the desert plateau of Ordos. Occasionally the river overflows its banks, causing most destructive floods, involving the loss of thousands of lives. In historic times it has altered its course eleven times, now flowing north, now south of the Shantung peninsula, and well meriting its name of China's Sorrow. The last change was in 1854, prior to which the river entered the Yellow Sea, 300 miles south of the promontory of Shantung.

Like the Hwang, the Yangtze rises in the plateau of Tibet. It is by far the most important river for navigation in China. Ships of 600 tons can come up to **Ichang**, 900 miles from the sea. An important tributary on the left bank is the **Min** River, which flows through what is, for its size, perhaps the most productive region in the world. For over two thousand years the waters of the Min have

been used for an elaborate system of irrigation, that has changed the **Chengtu Plain** from a bare plateau to a rich garden nearly three thousand square miles in area. China is intersected by numerous canals, of which the principal is the **Grand Canal** from Hangchow (on Hangchow Bay, south of Shanghai) to Tientsin.

PRODUCTIONS. The mineral resources of China are enormous, although still undeveloped. The **coal-fields** are of great extent and fine quality. In the north (in the province of Shensi) occurs the largest known coal-field in the world, in which some of the seams are 40 feet thick. Near Hankow are some of the richest **iron** fields in the world. In the plateau in the south-west most of the **copper** is obtained for the Chinese coinage, and there are other valuable minerals in the same district.

Although nearly the whole of China lies in the temperate zone, the warm and rainy summers enable crops to be grown which are generally characteristic of tropical or subtropical countries. In the south and centre **rice** is the chief crop. In the north its place is taken by **wheat, millet,** and **beans.** China was for long the chief producer of **tea,** and still exports large quantities. **Silk, sugar, opium,** and **cotton** are other characteristic products. Silk is the dress material of all but the poorest classes. The cotton is inferior in quality, and is sent chiefly to Japan. The porcelain or "**china**" manufactures of the country have long been famous.

TOWNS. The capital of China is **Peking,** situated on an open plain in the north. It stands at the crossing of important routes into Mongolia and Manchuria. The population is estimated at over a million. Almost as large as the capital is **Tientsin,** near the mouth of the Pei-ho. It is the port of Peking, and is connected with it by rail. Near the mouth of the Yangtze is **Shanghai** (with about a million inhabitants), through which passes most of the trade of the rich Yangtze valley. It is the busiest of the "treaty ports" (those open to foreign traders), and is rapidly becoming the commercial capital of the country. Large cotton mills have been erected round it. **Nanking,** on the Yangtze, is the capital of the surrounding district, and a centre of the silk industry. Higher up the river is **Hankow,**

situated at the junction of an important tributary. It is the centre of a very rich district, and the traffic by water through it is enormous. In addition the railway from Peking crosses the Yangtze at Hankow. Its population is now well over a million, and is growing rapidly.

Passing south along the coast we come to **Foochow**, the capital of a tea-growing province. Most of the tea trade of the district now centres round **Amoy** farther south, where the firing and packing are mainly done. It has one of the finest harbours on the coast. **Canton**, with a population of nearly a million, has a splendid situation near the junction of several navigable rivers, which penetrate into the interior in different directions. The people of the surrounding district are considered the most enterprising in China. Many thousands of the inhabitants of Canton live in boats moored in the river.

HONG KONG. The British island of Hong Kong is situated at the mouth of the Canton River. A portion of the opposite mainland is leased from China. It possesses a magnificent harbour, and is one of the greatest seaports in the world. The island is strongly fortified, and is the headquarters of the British Fleet in the Chinese seas. Most of the European products entering China pass through Hong Kong. **Victoria**, the capital, is a finely built town on the northern shore. There are large docks for the repair of war and merchant ships.

MANCHURIA.

The most important part of the country consists of the rich agricultural plain of **Liaotung**, continued north in the valley of the **Sungari**, a tributary of the Amur. Most of the mountains are densely forested, and there is growing up a considerable trade in **timber**. There is also a fair trade in **wheat**. **Beans** and **bean-cake** form the chief export. **Harbin** stands at the fork of the Trans-Siberian Railway. It is the centre of a rich wheat district, and has steam **flour-mills**. **Moukden** is the capital and the seat of government. **Port Arthur**, at the terminus of the railway, was leased to Russia, but since the Russo-Japanese War, has been in the hands of Japan.

MONGOLIA.

Mongolia is a vast plateau, from 3000 to 5000 feet above sea-level, and walled in by mountain-chains. On the whole it is a barren and inhospitable country, hot and dry in summer time, and bitterly cold in winter. There is sufficient rain in most parts to produce grass and shrubs, that form pasture for great herds of **sheep**, **camels**, and **horses**.

EASTERN TURKISTAN.

Eastern or Chinese Turkistan is the province bounded on the west by the Pamir, on the south by Tibet, and crossed by the Tien Shan ranges. In the east the country sinks to the **Tarim Depression**, the lowest part of which, the lake of **Lop Nor**, is only 2000 feet above sea-level. The country lies fairly open towards the east, and there have always been important trade routes between it and China. There are two main routes, one north, the other south of the Tien Shan. The south road keeps along the southern slopes of the Tien Shan to **Kashgar** and **Yarkand**, the two most important towns of Chinese Turkistan.

The only settled places of population are the oases formed by irrigation. **Grain**, **tobacco**, and all kinds of **fruits** grow luxuriantly. Eastern Turkistan is directly administered by Chinese officials. In many parts of the country ruins of ancient cities have been found, now covered by the drifting sands of the desert.

TIBET.

Tibet is a huge tableland, crossed by many great parallel mountain-ranges that generally run in an east and west direction. It is the highest extensive region in the world, ranging from 10,000 feet to 16,000 feet above sea-level. In the south it is bordered by the Himalaya, on the north by the Kwen-lun.

Tibet is dotted over with a large number of inland lakes, most of which are centres of inland drainage, and are therefore salt. The

chief lake is **Tengri Nor**, north of Lhasa. Many of the greatest rivers of Asia rise in Tibet.

Owing to its great elevation Tibet is a cold and barren country. Violent snowstorms sweep over it in winter, and most of the country is suitable only for grazing. The inhabitants live mainly along the southern border of the plateau. Sheep, goats, and horses are pastured on the grassy areas, and the **yak** is the typical beast of burden of Tibet.

The people are dominated almost entirely by their priests, most of the power being in the hands of the two chief priests, the Dalai Lama and the Tashi Lama. **Lhasa** is the largest town in Tibet. Just outside the town are great monasteries containing 18,000 monks. Tibet seems to be very rich in minerals, including **gold**, but the country's resources are still practically unknown.

JAPAN.

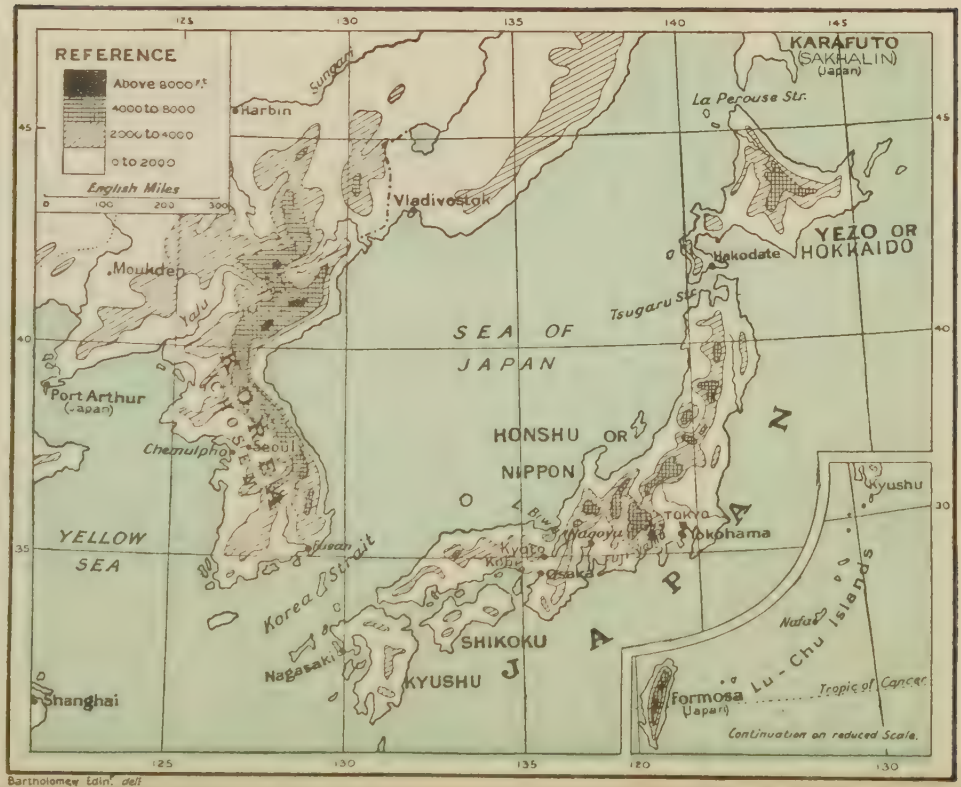
The Empire of Japan includes practically all the islands of eastern Asia from Kamchatka to the Philippines. The three most important islands are **Honshu** (formerly called Hondo or Nippon), **Kyushu**, and **Shikoku**. These islands alone are represented in the Japanese parliament, and the others may be considered as dependencies. They include **Hokkaido** (formerly Yezo) in the north, the **Luchu Islands**, **Formosa**, and, since the Russo-Japanese War, the southern half of **Sakhalin**. On the mainland the peninsula of **Korea** (**Chosen**) is now part of the Japanese Empire.

RELIEF. All the large islands are **mountainous**, so that only a very small fraction of the total area is fit for cultivation. The majority of the peaks are of volcanic origin, and there are more than **fifty volcanoes still active**. The best-known mountain is the beautiful, conical peak of **Fuji-yama**, over 12,000 feet high. Japan is exceedingly subject to **earthquakes**, and this is reflected in the flimsy and light materials used for their houses. Roads are generally bad, and goods are carried by men or animals. The railway system, however, is being rapidly extended.

CLIMATE. The most important part of Japan is in about the same latitude as northern Africa, but the climate is much more **extreme.** This is due to two causes. The country lies on the **east** of a continent. In addition its winds are of the **monsoon** type. In winter they blow from the north-west, that is, from the frozen interior of Asia, and this makes the country colder. As in other monsoon lands, **rain falls chiefly in summer,** and this helps the production of heavy crops. The climate of Japan is improved by the effects of a warm current from the south, called the **Kuro-siwo,** which corresponds to the Gulf Stream of eastern America.

PRODUCTIONS. The chief food crop is **rice,** but **barley, wheat,** and **beans** are also largely grown. The mulberry furnishes the **silk** that forms the most valuable product of Japan. **Tea** is largely grown, chiefly for export to America. The **camphor-tree** is found principally in Formosa. In the spring the land is white with the blossoms of the cherry and the plum. The most important minerals are **coal** and **copper.** The busiest coal-mines are those of Kyushu, although valuable fields also exist in Hokkaido. Copper-ore of fine quality is mined in Honshu, north of Tokyo. There are also deposits of fine **kaolin** or china-clay, and Japan like China is noted for its exquisite porcelain. The **fisheries** round the coast are very valuable, and fish is therefore one of the chief articles of food of the Japanese.

INDUSTRIES AND TOWNS. The capital of Japan is **Tokyo,** on a river at the head of Tokyo Bay. The river is accessible only to small vessels. The town contains the chief government buildings. There are many **artistic manufactures** for which Japan is famous, lacquer-work, ivory carving, and metal-work being the chief. In addition there are **match factories,** and **chemical and engineering works.** The population is about two and a quarter millions. The port of Tokyo is **Yokohama,** situated 18 miles down the bay, and the **chief seaport** of Japan. Japanese shipping is growing very rapidly, and is becoming a formidable rival to British shipping, not only in Japan, but in China and India. In **shipbuilding,** too, the Japanese have increased their output enormously since the beginning of the



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Great War. **Osaka** is the second town of Japan in point of size. It is a great commercial centre, and the chief seat of the **cotton** trade, which is making extremely rapid progress. The town has nearly one and a half million inhabitants. **Kyoto** lies inland near Lake Biwa. It was the old capital of Japan, and is the most picturesque of the large towns. The trade of Osaka and Kyoto finds an outlet at the fine harbour of **Kobe**, the second seaport of Japan. **Nagoya**, on a bay between Kobe and Yokohama, is especially noted for its manufactures of **art objects**. Fine **porcelain** is made near it, and it is famous for its exquisite **cloisonne** work. The chief town of Kyushu is **Nagasaki**, which possesses large docks and a splendid harbour. It is situated near valuable coal-fields, and is therefore an important **coaling-station**. It has **shipbuilding** yards and **engineering** works with the most modern of appliances. **Hakodate** is the chief town of Hokkaido.

LUCHU ISLANDS. This group consists both of volcanic and coral islands, and extends south from the main islands of Japan almost to the tropics. The chief products are **rice** and **sugar.**

FORMOSA. This island was taken from the Chinese in 1895. The mountains rise in the centre to a height of over 14,000 feet. The island is extremely fertile, and produces rich crops of **rice, sugar,** and **tea.** There are many valuable **camphor-trees.** The mineral resources are also considerable, and include good **coal-fields.**

KURIL ISLANDS. The Kuril Islands form a festoon enclosing the Sea of Okhotsk. They are volcanic islands, and are of little value for agriculture or commerce. Some of the chemical products of the volcanoes are worked by the Japanese.

KOREA (CHOSEN). Korea is a mountainous peninsula, projecting south, and separating the Yellow Sea from the sea of Japan. Look at the map on p. 138. Notice that the mountain backbone of the country, which averages about 6000 feet in height, keeps closer to the east coast than the west. There is a **narrow** but **fertile strip** along the east, and numerous **fertile valleys** lie among the spurs running from the main chain to the west. The most important river is the **Han**, which reaches the west coast near Chemulpho, and is navigable for 160 miles.

The climate of Korea is exceptionally good, and rice, grain, tobacco, and cotton all grow well. Cattle are numerous and of good quality. **Copper, iron,** and **coal** are abundant, but their development is slow, owing to transport difficulties. Gold-mining has now been started on modern methods by an American company. The chief exports are **rice, beans,** and **gold.** The capital is **Seoul,** the port of which is **Chemulpho.** A railway runs through the Peninsula to **Fusan,** and telegraphs and telephones are being introduced.

ASIATIC RUSSIA.

RELIEF. Most of Asiatic Russia is formed by the great northern plains that stretch from the Caspian Sea in a north-easterly direction to the Arctic Ocean. The southern border forms part of the mountain system of Asia. The **Caucasus Mountains** are wholly in Russia. They are composed of several parallel ranges, which in places extend over a width of 150 miles. **Mount Elbrus,** the highest peak, is an ancient volcano, and is over 18,000 feet high. Part of Russian Turkistan extends into the great plateau of the **Pamir.** From the Pamir the mighty ranges of the **Tien Shan** run to the north-east, with peaks over 20,000 feet in height. The **Yablonoi Mountains,** have the structure of a dissected plateau, rather than folded chains. The **Stanovoi Mountains** really form a great escarpment that rises gradually from the Siberian plain. The mountains of **Kamchatka** are formed of a line of active volcanoes, and therefore this peninsula should be considered as forming part of the festoons of islands that border the coast of Asia on the east.

RIVERS. The **Sir** and the **Amu** (or Oxus) flow through Turkistan to the salt inland lake, called Lake Aral. These rivers seem to have been much larger formerly than now. The great lakes also, such as Lake Aral and Lake Balkash, seem to have shrunk. It is believed, therefore, that the climate of these regions is slowly becoming more arid, and if this is the case, it would explain one very strange feature of western Asia, the presence

of ruins of cities and other large communities where now there is only desert land. The Sir Darya and the Amu Darya become smaller as they approach Lake Aral, because of the great evaporation, and the large quantities of water used for **irrigation.** In the sixteenth century the Amu flowed into the Caspian Sea.

The great rivers of Siberia are the **Ob** (or Obi), the **Yenisei**, and the **Lena.** The basin of the Ob is more than a million square miles in area. Its chief tributary is the **Irtish**, and both rivers are navigable almost throughout their whole course. Much of the Ob basin is an enormous marsh, impassable in summer. The chief tributary of the Yenisei is the **Angara**, which flows from Lake Baikal through the amphitheatre of Irkutsk. The Yenisei and the Ob are connected by a canal.

Lake Baikal presents many interesting features. Its shores are formed by steep cliffs, and in one part it is **over a mile deep.** It has been formed in a "rift valley," by the subsidence of part of the earth's crust. Another remarkable feature is that seals, which are *marine* animals, are found in the lake. The **Lena** rises not far from Lake Baikal, and in its lower course is four or five miles wide. Unlike the other Siberian rivers, it enters the Arctic Ocean through an immense **delta.** The **Amur** flows in a series of great curves into the Sea of Okhotsk.

CLIMATE. The climate of Asiatic Russia is almost everywhere **extreme.** Look again at Fig. 26, showing the range of temperature throughout the year at Nerchinsk. The summers are hot and the winters are cold, and **increase in severity as one goes east.** In many districts the rainfall is scanty, and unless irrigation is practised, the land is useless for agriculture.

PRODUCTIONS. In the mountainous parts of the country minerals are abundant, but are not yet properly developed. Russia ranks fifth on the list of **gold**-producing countries, and at least three-quarters of Russian gold is mined in Siberia. Caucasia is one of the richest **petroleum** centres in the world, the United States being its only rival. Agriculture is the chief occupation of the people, and the country now produces considerable quantities of **wheat**, exported

from Archangel or the ports of the Baltic. In recent years **dairy-farming** has become important, and much Siberian **butter** now reaches this country. Great herds of live stock are kept on the steppes by wandering tribesmen. In the north, **furs** are obtained and the river **fisheries** are valuable.

COMMUNICATIONS AND TOWNS. Since the Great War, Asiatic Russia has broken up into several republics, viz., Siberia (by far the largest), Turkistan, Yakutsk, Azerbaijan, and Georgia. The **Trans-Siberian Railway** is one of the most important in the world, as it gives Europe rapid and direct access to China, Japan, and the east. From Samara on the Volga the line runs to **Omsk** on the Irtish, the chief trading town in that district. The line passes south of **Tomsk**, the one university town in Siberia, and the largest town in Western Siberia. No town of importance is passed until **Irkutsk** on the shores of Lake Baikal is reached. Irkutsk is the capital of Eastern Siberia. The line now runs across Manchuria to **Harbin** (or Kharbin), where it branches. One branch goes south to Port Arthur, while another continues to **Vladivostok**, the chief Russian town on the Pacific coast. The increasing number of Russians who are settling in Eastern Siberia, and the fact that the port is free from ice most of the year, have caused Vladivostok to grow rapidly into an important town.

The **Trans-Caspian Railway** is the chief highway of Russian Turkistan, now a separate republic. Much of the country is barren steppe-land, which passes into actual deserts. Where the rivers supply water for irrigation, however, the country is wonderfully fertile, and produces **cotton**, **grain**, and **fruits** of fine quality. The chief towns are situated on fertile oases bordering the irrigation canals. **Bukhara** was once a famous centre of literature and science. It is still the meeting-place of caravan routes from Russia, Persia, India, and China. **Silk** and **cotton** are manufactured. Another intellectual centre in former times was **Samarqand**, the ruined palaces of which recall the period when it was one of the largest towns in Asia. The railway runs east to Kokand, and a northern branch passes through **Tashkent**, runs down the valley of the Sir, and, passing through

Orenburg on the Ural River, reaches the Trans-Siberian Railway. Tashkent is the largest town in Russian Turkistan, and has **silk** manufactures and **leather** working. The chief product carried by the Trans-Caspian Railway is **cotton**, which is grown generally in the district through which the railway passes.

CAUCASIA. Most of Caucasia now forms the republic of **Georgia.** The chief town of Caucasia is **Tiflis.** Communication between it and the country north of the Caucasus is by the **Darial Pass.** Only a fifth of the inhabitants are Russians, the rest being Armenians and other Asiatics. The supreme importance of Tiflis is being threatened by **Baku**, on the Caspian Sea, the centre of the petroleum industry. The oil is sent west through a hundred miles of piping, and is then taken in tank carriages to **Batum**, on the Black Sea. Tank steamers on the Caspian Sea also distribute it to different parts of Russia.

THE MALAY ARCHIPELAGO.

The Malay Archipelago consists of all the groups of islands that lie between the continent of Asia and the island of New Guinea. The islands fall into **two well-marked divisions**, some having plants and animals like those of **Asia**, the others having plants and animals like those of **Australia.** The boundary between the two divisions is called **Wallace's Line**, after the famous naturalist, Alfred Russel Wallace, who first pointed it out. The line passes east of Java, runs through the Strait of Macassar, and keeps south of the Philippine Islands. The Asiatic islands rise from a **continental shelf** that stretches south-east from Indo-China. With the exception of part of Celebes, the other islands rise from very deep water. The most remarkable feature of the Malay Peninsula is the large number of active **volcanoes** that are to be found.

All the islands lie within the tropics. The climate is, therefore, both warm and moist, with little variation throughout the year. In places the rainfall is well over 100 inches per annum.

SUMATRA. Sumatra is separated from the Malay Peninsula

by the **Strait of Malacca.** The island is 1000 miles long, and in area is the second in the archipelago. There is a long ridge of high mountains near the west coast, and a low plain bordering the east coast. The mountain-ranges contain many **volcanoes.** The chief product is **coffee,** but the cultivation of **sugar** and **tobacco** is rapidly increasing. The **gutta-percha** tree is the most valuable of the forest trees.

JAVA. Java is the most important of the islands of the archipelago, and contains half the total population. The island is very mountainous, and many of the peaks are active **volcanoes.** The tropical vegetation is exceptionally luxuriant. The most valuable product is **coffee,** but the area given to this is being encroached on by **tea.** On the low plains **sugar** is grown, and **tobacco** is also important. The chief town is **Batavia,** the capital of the Dutch possessions in the east. A fine harbour has been constructed, capable of accommodating large vessels. A considerable proportion of our supplies of **petrol** comes from oil obtained from Java and Sumatra.

BORNEO. Borneo is the largest island of the archipelago. The whole of northern Borneo is under British protection. **Rubber, gutta-percha, sago, coffee,** and **tobacco** are all largely grown. **Petroleum** is also produced. The small island of **Labuan** has deposits of coal, and is used as a coaling station.

CELEBES. The peculiar shape of Celebes is due to mountain-ranges that radiate out from a centre. The northern peninsula is the most fertile part, and grows exceptionally fine **coffee.**

THE MOLUCCAS. The Moluccas or Spice Islands are still noted for the spices they produce. **Cloves** and **nutmegs** are the most important. The islands furnish practically the whole world's supply of nutmegs.

THE PHILIPPINE ISLANDS. The Philippine Islands consist of over a thousand islands, the combined area of which is almost equal to that of the British Isles. They contain numerous volcanoes, and are subject to destructive earthquakes. The largest and most important island of the group is **Luzon,** which produces **hemp,**

sugar, and **tobacco**. The capital is **Manila**, which is also the chief port and trading centre. The Philippine Islands were taken from Spain by the United States in 1898.

The islands of the Malay Archipelago belong chiefly to Holland. The only important exceptions are the Philippines and the north of Borneo. The Dutch possessions are more than sixty times the area of Holland itself, and form a valuable source of wealth. The native inhabitants of the archipelago are chiefly **Malays** in the west, and **Melanesians** in the east. The Malays are of Mongolian stock, while the Melanesians are similar in some respects to Negroes. In character also the small, grave, courteous but revengeful Malay contrasts strongly with the tall, excitable Melanesian.

AFRICA

THE area of Africa is roughly about **three** times that of Europe. The coast is not, like that of Europe, broken up by deep gulfs and projecting peninsulas, but runs in large, open curves, with only minor indentations. There are no large groups of important islands. The only large island is Madagascar.

RELIEF. The structure of Africa is also on the whole comparatively simple. The Atlas Mountains are separated from the rest of Africa by a deep valley that skirts their southern border, and runs into the Mediterranean at the Gulf of Gabes. South of this depression, Africa consists in the main of a great series of **plateaus** that come close up to the coast-line, and then sink in a series of **terraces** or steps, leaving as a rule only a **narrow, coastal plain.**

Look at the orographical map facing p. 152. It shows that the **northern** plateaus are **not so high** as those in the **south.** Notice also from the map, that in the centre of Africa on both sides of the Equator there is a great circular basin, drained by the Congo.

Many of the mountains of Africa referred to as *ranges* are merely **escarpments** formed by the edges of the plateau. Thus the so-called Kong Mountains, parallel to the coast of the Gulf of Guinea, are really the southern edge of the plateau. The same is the case with the **Drakensberg**, in the west of Natal. Many of the most important mountains have been built up above the surface of the plateau by **volcanic eruptions.** In the east, **Kilimanjaro** and **Kenya** are volcanic, and are respectively 19,000 and 17,000 feet in height. The **Cameroons**, east of the Gulf of Guinea, are also volcanic, and are over 12,000 feet above sea-level.

The Great Rift Valley. Perhaps the most peculiar feature of the geography of Africa is the Great Rift Valley, that runs from Palestine to Lake Nyasa. The crust of the earth has been fractured along two parallel lines, and the strip between has sunk, leaving a wide valley floor bordered by steep sides. The **Red Sea** is a part of this rift valley. It then runs south by **Lake Rudolf** to **Lake Nyasa**, where a branch goes north-west, and includes **Lake Tanganyika** and **Lake Albert.** Compare the long, narrow shape of the lakes in the rift, such as Tanganyika, with an ordinary lake such as Lake Victoria.

RIVERS. The most famous river in Africa is the Nile, which is described later under Egypt. The **Congo** is not so long as the Nile, but has a greater volume of water. Its sources are the streams that flow into **Lake Bangweulu.** It is navigable from **Stanley Falls** to **Stanley Pool,** a distance of 1000 miles. Below Stanley Pool, a series of rapids render navigation impossible. Most of the river basin is covered by dense tropical forests of enormous extent, and containing many valuable products. The region is inhabited by a large number of separate tribes of natives (certainly over 100), many of whom are cannibals.

The **Niger** rises north of the Kong escarpment, and at first flows inland. It bends round in a great curve, and reaches the Gulf of Guinea after a course of over two and a half thousand miles. The river is an important highway, for it is navigable for most of its course. The largest river flowing to the east coast is the **Zambezi,** which is about 2000 miles long. It rises at a height of 5000 feet, not far from some of the head-streams of the Congo. In its middle course it plunges over the **Victoria Falls,** equal in magnificence to any falls in the world. From the falls to the mouth the Zambezi is navigable. The **Orange River** rises in the Drakensberg and flows west, forming the boundary between Cape of Good Hope and the Orange Free State. Its tributary the Vaal forms the southern boundary of the Transvaal. The river descends from the plateau to the ocean in a series of falls.

The rivers described are associated with the names of many of the most famous African explorers. Speke solved the riddle of

many centuries when he found the Nile flowing from the Lake Victoria over the Ripon Falls, Mungo Park explored the Niger, while the Congo is always associated with the name of Stanley, who traced the river to the Atlantic. The Victoria Falls were seen for the first time by European eyes when Livingstone explored the Zambezi.

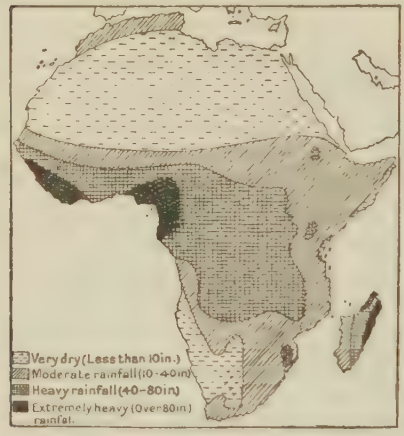

FIG. 81.—Rainfall Map of Africa.

CLIMATE. Notice that Africa extends almost exactly as far to the south of the Equator as it does to the north. This divides the continent into two sets of zones, having somewhat similar climates, one zone to the north, the other to the south of the Equator. In the equatorial belt the **temperature does not vary** much throughout the year. In this region the rainfall is **heaviest**, and falls at **all seasons** of the year. On the borders of the temperate zone, both north and south of the Equator, are belts of **very low rainfall.** This gives rise to the **Sahara Desert** in the north, and the **Kalahari Desert** in the south. In the extreme north the climate is similar to that of other Mediterranean regions, while in the south the only part that has a deficient rainfall is the west coast. This is due to cold, uprising currents round the south-west coast, so that winds blowing from sea to land are warmed, and therefore do not give up their moisture.

VEGETATION ZONES. Round the Equator and along the shores of the Gulf of Guinea there are dense **tropical forests**, producing rubber, ebony, teak, and other valuable trees. This belt does not extend right across to the east coast. As we recede from the Equator the rainfall becomes less, the forests become thinner, and a

savanna country is entered. This is grass-land, with scattered trees, mainly along the river-valleys. This region is the chief home of the great animals of Africa. North and south of the two savanna regions the rainfall becomes less, the trees disappear, the grass is more scanty, and rough thickets of thorny plants are found. This district may be described as **scrub**-land. This finally passes into the true **deserts** of the Sahara and South-west Africa. Compare carefully the vegetation map with the rainfall map.

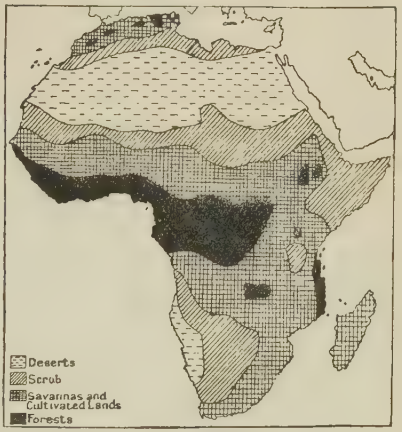

Fig. 32.—Vegetation Map of Africa.

ANIMALS. The wild animals of Africa are more numerous and of greater size than those of any other continent. The savannas are ranged over by countless herds of grass-eating animals and by the flesh-eaters that prey on them. The hippopotamus and the giraffe are found only in Africa. The lion, the leopard, the hyena, and the jackal are common. Although rapidly decreasing in numbers, large herds of elephants may still be found. Antelopes of many species occur in enormous numbers. In the forests of West Africa the gorilla and man-like apes of various kinds are found. Crocodiles swarm in many of the rivers, and snakes are generally common. In parts of Central and South Africa the tsetse-fly kills off all domestic animals, although its bite is harmless to man. In the Congo and Uganda the bite of a similar fly produces the deadly sleeping-sickness in African natives.

PEOPLE. By far the greatest part of Africa is inhabited by the **negro** race. The typical negro, with black skin, woolly hair, thick lips, and projecting jaws, is found chiefly in a belt north of the Equator that stretches across Central and West Africa. From the

Equator to the south of the continent the tribes belong to the **Bantu** division of the negro race. The Zulus are typical Bantu people. The colour is not so dark and the negro characteristics are not so pronounced.

In the south-west are the **Bushmen**, very small in stature and yellowish-black in colour. The **Hottentots** of the south-west are perhaps a mixed race, partly of Negro, partly of Bushman blood. In the north of the continent there are two divisions of the white race, the **Hamites** and the **Semites**, to which belong the Berbers, the Arabs, the Egyptians, and other races of the north.

EGYPT AND ANGLO-EGYPTIAN SUDAN.

In 1922 Egypt was declared an independent sovereign state, but Britain still retains certain rights. British influence extends from the Mediterranean to the Uganda Protectorate, a length of nearly 2000 miles. The most important part of the country is the Nile valley, which varies from less than a mile to over thirty miles in width. On each side of the valley the sides rise in steep cliffs into the desert plateau. In its upper course the Nile valley occurs in the **savanna** region of the Sudan, while in its middle and lower course the valley is bordered on both sides by deserts.

THE NILE. The most famous river in Africa is the Nile. It flows first from Lake Victoria to Lake Albert. From the latter lake it descends the high equatorial plateau in a series of cataracts. On reaching more level ground, the river broadens and flows more slowly. At Khartoum the main stream (White Nile) is joined by the **Blue Nile** from Abyssinia. From the junction of the Blue Nile to the mouth the navigation of the river is hindered by six rapids, the lowest of which is at Aswan. The prosperity of Egypt depends on the annual floods of the Nile, for the country is almost rainless and is entirely dependent on irrigation. In summer the level of the river begins to rise, and reaches its highest in October. The annual floods are due to the **heavy rains** that occur in Abyssinia in spring, and the flood-water comes chiefly from the Blue Nile, and takes many

weeks to reach lower Egypt. At **Aswan** an enormous **dam** has been built in order to store the flood-waters, which are used for irrigation in the dry season. The rise in the water-level has caused the first and second cataracts to disappear. There is another great dam at **Asyut**, and others below Cairo. After leaving Cairo the river forms a **delta**, which at the Mediterranean Sea is 150 miles wide.

SUEZ CANAL. The Suez Canal extends for nearly ninety miles between **Port Said** on the Mediterranean, and **Suez** on the Red Sea. By its means the sea-voyage to India or China is much shortened. Over 60 per cent. of the ships passing through the canal are British.

CLIMATE. The equatorial parts of the country have **abundant rains**, but certain regions of the desert are almost **rainless**. At Alexandria the rainfall is 8 inches, about one-third that of London, while at Cairo the rainfall is only $1\frac{1}{2}$ inches per annum. It is plain, therefore, that agriculture is only possible by means of **irrigation**.

In the Nile valley the temperature practically never falls below freezing-point, but in the **desert** the **extremes** of heat and cold are much greater, and frost at night is not uncommon. The average temperature of Cairo in *winter* is about the same as that of central Scotland in *summer*. Egypt has therefore become in recent years a very fashionable **winter resort**.

PRODUCTIONS. Egypt was a famous grain-growing country in classical times, and it still produces large crops of **wheat**, **maize**, and **durrah** (or millet). **Beans** are exported to a considerable extent. In recent years, **rice** and **sugar** have been grown with success on the lowlands of the Delta. In lower Egypt tobacco is grown, but the well-known Egyptian cigarettes are manufactured in Egypt mainly from imported Turkish tobacco. By far the most valuable of all the products of Egypt is **cotton**. Raw cotton and cotton-seeds form almost nine-tenths of the total exports of the country. In the Sudan, **gum**, **ivory**, and **rubber** are obtained. The mineral resources of Egypt are unimportant.

TOWNS. The capital of Egypt and the largest town is **Cairo**, with a population of over half a million. Its fine climate and good hotels make it a favourite **winter resort** for wealthy Europeans. It

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FIG. 33.—Africa—Political. (British Possessions shaded.)

AFRICA - OROGRAPHICAL

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is also the chief centre for tourists visiting the Pyramids and other monuments and temples of Egypt. The most important commercial town is **Alexandria**, the **chief seaport** of Egypt. At the junction of the White Nile and the Blue Nile is **Khartoum**, until recently the southern terminus of the railway. At the beginning of 1910, however, the railway had reached a point 120 miles south of Khartoum, and it is still being pushed rapidly southwards. The town is the centre of the Sudan trade, which so far has been small, but is likely largely to increase.

The Nile is now connected with the Red Sea by a railway running from Berber to Port Sudan. In 1918 Cairo was connected with the railways of Palestine.

LIBYA. Between Egypt and Tunisia lie the Italian colonies of Libya and Cyrenaica. The land bordering the Mediterranean Sea is fertile, and grows the usual Mediterranean products. **Sponge fishing** is carried on along the coast, and **ostrich feathers** brought by caravan from Central Africa are exported. The chief seaport is **Tripoli.**

EASTERN AFRICA.

The Rift Valley may be considered as a natural boundary between Central and East Africa, and therefore the latter includes Abyssinia, Italian East Africa, French East Africa, British East Africa, the Tanganyika Territory, and Portuguese East Africa.

ABYSSINIA. Abyssinia, an independent state, consists of a **strongly dissected plateau.** Most of the country is 8000 feet above sea-level. The largest lake, **Lake Tana,** is the chief source of the Blue Nile. **Gold** is worked, but the mines are neither extensive nor rich. **Coffee** is grown generally.

ERITREA. The Italian possessions include **Eritrea** and **Italian Somaliland.** Eritrea is a barren country with few commercial possibilities. The chief products are **salt,** which is used instead of money in Abyssinia, and **pearls,** obtained from the Red Sea. The chief town is **Massawa.**

SOMALILAND. Somaliland is the only large peninsula in Africa.

The native inhabitants, the Somali, are wandering tribes of herdsmen. **Ivory** and **gum** are the chief products. The country is divided between Britain, Italy, France, and Abyssinia. The island of **Socotra**, which lies off the point of the peninsula, is a British possession.

BRITISH EAST AFRICA. British East Africa consists of two parts, the **Kenya Colony** and the **Uganda Protectorate.** Bordering the Indian Ocean there is a low coastal plain, from which the country rises steeply inland to the plateau. The eastern part of the plateau is barren and waterless, but farther inland the country is grassy and of the savanna type. The highest mountain is the great volcanic peak of **Kenya**, which rises almost from the Equator. **Mombasa**, the chief town and port of Kenya Colony, has a deep and spacious harbour, and is connected by rail with Port Florence, on the Lake Victoria. The coastal plains produce rubber and ivory, while Uganda is well suited for the growing of sugar, coffee, and tobacco. Uganda produces more **cotton** than any other part of the British Empire except India.

ZANZIBAR AND PEMBA. These two islands form a British Protectorate. They are composed chiefly of coral, and lie off the coast of the Tanganyika Territory. The soil is very fertile, and **cloves** are the chief commercial product. The town of **Zanzibar**, on the west coast of the island, is the most important trading centre along this part of the African coast.

TANGANYIKA TERRITORY.[1] The Tanganyika Territory extends from the Indian Ocean as far west as Lake Tanganyika, and from Lake Victoria in the north to Lake Nyasa in the south. A low, moist and fertile coastal plain is bordered by the steep escarpment of the interior plateau. The eastern branch of the Rift Valley breaks the general level of the tableland, and from an offshoot of it there towers up to a height of 19,000 feet the volcanic mass of **Kilimanjaro**, the loftiest peak in Africa. The mineral wealth is unimportant, but among chief products are **sisal-fibre, coffee, rubber**, and **ivory**. The chief port is **Dar-es-Salaam**, a well-built

[1] Formerly German East Africa.

town with a fine harbour. From the town, caravans start for Lake Tanganyika.

PORTUGUESE EAST AFRICA. The structure of the Portuguese possessions is similar to that of the regions of East Africa already described. The lower course of the River **Zambezi** is entirely in Portuguese East Africa. It is one of the few navigable rivers flowing to the east of the continent. Navigation is possible for 400 miles and boats of light draught can also ascend its tributary the **Shire,** leading into British Nyasaland. Farther south, the **Limpopo** follows a course similar to that of the Zambezi, and is nearly as long.

The tropical forests are the most valuable assets of the country. The most important trading town is **Lourenço Marques,** on Delagoa Bay, which has a fine harbour suitable for large vessels. It is the terminus of a railway running to Pretoria, and thus forms a convenient **seaport for the Transvaal.** Farther north is **Beira,** on another good harbour, and the terminus of a railway from Salisbury. Most of the trade of Southern Rhodesia therefore passes through Beira.

CENTRAL AFRICA.

THE BELGIAN CONGO. The most central country of Africa is the Belgian Congo, which occupies most of the basin of the River Congo. The western branch of the Rift Valley forms roughly the eastern boundary. Most of the country consists of a low tableland about 1000 feet above sea-level, and surrounded by higher parts of the African plateau.

The Equator passes through the country, and in most parts there are heavy equatorial rains that nourish the **enormous tropical forests** of the Congo, probably the largest in the world. Valuable products, such as rubber, teak, ebony, and palm oil, are obtained from the forests. The **mineral** resources are known to be great, though not yet properly worked. A railway has been built to the rich **copper** district of **Katanga,** in the south of the country. The chief exports are **copper** and **rubber.** Other important exports are **ivory** and **palm-kernels** for the making of palm oil.

The country was first opened up by the famous explorer Stanley. A private company, with the late King Leopold of Belgium at its head, was formed to test the resources of the region, and the state is now practically a Belgian possession.

Boma, on the estuary of the Congo, is the chief port, and the seat of government. In order to avoid the rapids and gorges of the lower Congo, a railway runs to **Leopoldville** at Stanley Pool. From there, navigation can be carried on by fairly large boats for a thousand miles to Stanley Falls. The country is on the whole unhealthy, and not suited for European settlement.

BRITISH CENTRAL AFRICA. British Central Africa (which includes the political divisions of the **Nyasaland Protectorate** and **Northern Rhodesia**) is part of a great **plateau** stretching west from Lake Nyasa, and including both sides of the Shire River. Almost the whole of the country is over 3000 feet above sea-level, and in the north the average altitude is about 7000 feet.

Iron is found generally, and copper and gold are fairly abundant. **Zinc** and **lead** are mined at Broken Hill, and in the extreme north there are valuable **copper** ores, forming part of the mineral field that stretches to Katanga in the Congo State. The heavy cost of transport to the sea, however, is a grave handicap on base-metal mining. Agriculture and commerce are carried on only in the east in parts of Nyasaland. **Coffee**, introduced by Scottish settlers, is grown chiefly on the plantations of the **Shire Highlands**, and is of excellent quality. **Cotton** and **tobacco** have been introduced with great success, and considerable quantities are exported. **Blantyre**, on the Shire Highlands, is the most important commercial centre. The railway from Southern Rhodesia crosses the Zambezi at the Victoria Falls, and ends at Broken Hill. British steamers and sailing-boats ply on Lake Nyasa and Lake Tanganyika.

SOUTH AFRICA

SOUTHERN RHODESIA. The dividing line between Central and South Africa may be conveniently taken at the Zambezi. Southern Rhodesia extends from the Zambezi southwards to the Limpopo.

It lies wholly within the tropics, but the heat is tempered by its situation on the South African Plateau, generally from 3000 to 5000 feet above sea-level. Parts of it reach over 7000 feet above the sea.

The altitude of the country makes it one of the **healthiest** parts of Africa. The rainy season is in summer, namely, from October to April. By far the most important crop is **maize** (mealies). Wheat and oats are grown in winter under irrigation. **Tobacco** and **cotton** have proved very successful, so that their cultivation is rapidly extending; all kinds of **fruits** do well. The country is especially suited for **stock-rearing**. **Gold** is widely distributed, and the production has advanced very rapidly. In 1926 about £2,500,000 of gold were produced. **Coal** of good quality is obtained from the **Wankie Coal-field**, 60 miles east of the Victoria Falls.

The largest town is **Bulawayo**, and the capital of the country is **Salisbury**. From Bulawayo a railway runs north-east to Salisbury, and from there goes east to the seaport of Beira. The main Cape to Cairo line goes north-west and crosses the Zambezi at the Victoria Falls. It then runs north to Broken Hill, where the main line terminates. At the end of 1909 a branch line was opened, joining Broken Hill to the Katanga railway in the Congo State.

THE TRANSVAAL. The Transvaal, the Orange Free State, Natal, and the Cape of Good Hope form the **Union of South Africa.** The northern part of the Transvaal lies within the tropics. Most of the country consists of a **plateau**, with an average elevation of about 5000 feet. The steep eastern escarpment of the **Drakensberg** runs north into the Transvaal. The two largest rivers, the **Limpopo** and the **Vaal**, form for long distances the northern and southern boundaries of the colony.

The rainfall is highest in the east, and falls chiefly during the summer months: December, January, and February. In the lower districts of the east, therefore, good crops can be raised. **Maize** is the most important, but the growing of **tobacco** is rapidly becoming a valuable branch of agriculture. Most of the high plateau is suitable for rearing **cattle.**

The Transvaal is the richest mineral region in Africa. It now

produces more **gold** than any other country in the world. The gold is obtained from a long, rocky ridge stretching east and west for nearly fifty miles, and called the Witwatersrand (white waters ridge), or simply the **Rand**. In 1924 from the Transvaal mines there was produced gold to the value of over £40,000,000, more than half of the whole world's supply. There are also important **diamond** mines. The largest diamond ever found (the "Cullinan," 4½ inches long, uncut) was obtained from a Transvaal mine. **Coal** is found in several parts of the colony, one important field being just east of Johannesburg.

The chief centre of the Rand gold-mining district and the largest town in South Africa is **Johannesburg**. The population is nearly three hundred thousand. The seat of government of the Union is **Pretoria**. The foreign trade of the Transvaal is carried on largely through Lourenço Marques, which is connected with Pretoria by rail. Another line runs from Johannesburg to Durban, the chief port of Natal.

THE ORANGE FREE STATE.[1] This colony lies between the Vaal River and the Orange River. Like the Transvaal, it forms part of the South African Plateau. The climate is healthy, but the **scanty rainfall** is a serious drawback to agriculture. Only in the south, where the mountains of Basutoland induce a plentiful rainfall, are there rich agricultural tracts producing heavy grain crops. Most of the country is devoted to **cattle-rearing**. In the west, **diamonds** are found. The capital is **Bloemfontein**, on the main railway line from Port Elizabeth to Johannesburg.

NATAL. Natal consists of a series of terraces, which rise inland until on the borders of Basutoland the mountains are over 10,000 feet above sea-level. The country lies in the path of the south-east trade-wind, and the moist winds from the ocean are forced by the mountains to rise into colder parts of the air and give up their moisture as rain. The rainfall, except far inland, is therefore adequate.

With regard to agriculture, the country may be divided into **three belts**. Bordering the sea there is a low **coastal plain**, on which are grown **sugar**, **rice**, and **tropical fruits**, while on the hill-slopes

[1] Formerly the Orange River Colony. The original name has been reverted to.

tea is grown. The next belt, which is farther inland, and therefore higher above sea-level, produces considerable quantities of **grain.** Still farther inland there are immense stretches of fine grazing grounds for **cattle** and **sheep.** **Wool** is the chief export, and **sugar, hides**, and **maize** are also important. The most valuable mineral **is coal**, worked near the little towns of Newcastle and Dundee. The largest town and chief seaport is **Durban**, which possesses a fine harbour. The capital is **Pietermaritzburg**, generally called simply Maritzburg. A railway with extremely difficult gradients runs inland from Durban through Maritzburg to Johannesburg.

THE CAPE OF GOOD HOPE.[1] The Orange River forms the northern boundary of the Cape of Good Hope. This province includes British Bechuanaland.

RELIEF. The Cape of Good Hope rises from the sea up to the high South African tableland in a series of great steps or **terraces.** Bordering the sea there is the **coastal plain.** The country then rises by an escarpment into the **Little Karroo**, bordered on the north by the Zwartebergen. Another step leads up to the **Great Karroo**, bordered on the north by the Nieuweveld Mountains and the Sneeuwberg. The last step takes one to the summit of the plateau, or, as it is sometimes called, the **High Veld.**

There are no navigable rivers. In the rainy season they are in flood, and in the dry season reduced to tiny streams. Their mouths are often choked with sand, and there are consequently **few good harbours.**

CLIMATE. The most important factor in the climate is the rainfall. In the east the **summer** is the **rainy** season. The south-west has **winter rains** (Mediterranean type), while in the north-west over large areas the rainfall is very scanty. The occurrence of the rainy season at different times is explained by the direction of the winds, which are from the south-east in summer (trade-winds) and from the north-west in winter.

PRODUCTIONS. Much of the country is too dry for agriculture, but irrigation is overcoming this difficulty in many parts. Round

[1] Formerly Cape Colony.

Cape Town most of the fruits of the Mediterranean can be grown, and many parts of the east are fertile. The most valuable grain is **maize.** Considerable quantities of **wine** are now being exported, and **tobacco**-growing is becoming common. The most important branch of farming, however, is the rearing of **sheep** and **cattle.** South Africa ranks next to Australia and New Zealand in the supplies of wool sent to the United Kingdom. **Ostrich**-farming is also carried on.

The chief minerals are **diamonds** and **copper.** The richest diamond mines in the world are near Kimberley. As in the Transvaal, the diamonds occur in the "blue ground" that fills the great volcanic pipes of the region. Copper is found in Namaqualand. The mines are connected by a light railway with Port Nolloth, where the copper is exported.

COMMUNICATIONS AND TOWNS. The capital of the Cape of Good Hope and the seat of legislature of the Union is **Cape Town,** on Table Bay. It occupies a beautiful situation at the foot of Table Mountain. It is by far the largest town in the province. Large docks and a breakwater have greatly improved the harbour. After Cape Town the most important seaport is **Port Elizabeth,** on Algoa Bay. Fine quays have been built, but the anchorage is rather a roadstead than a safe harbour. The growth of **Kimberley** has depended entirely on the diamond mines in the neighbourhood.

Since there are no navigable rivers in the state, traffic is carried on chiefly by railways. From Cape Town begins the railway that is intended in the future to stretch from **Cape to Cairo.** It runs through the centre of the country to Kimberley, then passing Mafeking, it runs north into Rhodesia. This railway connects at several points with a parallel main line, from Port Elizabeth and East London, through Bloemfontein to Johannesburg, Pretoria, and the centre of the Transvaal. Much of the Rand gold is sent by this line to the coast. The gradients by which the railways mount to the plateau are often difficult and steep.

BECHUANALAND. North of British Bechuanaland (now a part of the Cape of Good Hope) is the **Bechuanaland Protectorate.** It includes most of the barren lands of the Kalahari Desert, inhabited

by a few scattered native families. There is enough fairly good pasture-land to sustain great herds of cattle and sheep. The inhabitants are chiefly tribes of Bantu race, ruled over by native chiefs.

WEST AFRICA.

With the exception of the southern half of South-west Africa, the parts of the continent still to be described lie within the tropics. Bordering the ocean there is a coastal plain of varying width, flanked on the east by the edge of the plateau that makes up the greater part of Africa. Many parts of the coast are dangerous on account of heavy surf, and there are few good harbours. Along the west coast of Africa the climate is, as a rule, very unhealthy.

The productions of West Africa are chiefly derived from the tropical forests. **Palm oil** and **palm kernels**, **rubber** and **nuts**, are the most important. From certain parts, **gold-dust**, **ivory**, and **cotton** are exported. The dense forests are the home of the gorilla and the chimpanzee.

SOUTH-WEST AFRICA.[1] There is no good harbour along the coast. The interior is dry, and what few rivers there are run only for part of the year. The country is suited chiefly for grazing. Copper in considerable quantity occurs near Windhuk, the largest settlement. **Walvis Bay** is the principal seaport.

ANGOLA. Angola is the largest of all the Portuguese colonies. The plateau in the south, rising to an altitude of 5000 or 6000 feet, continues the dry, **steppe-like** conditions of South-west Africa. In the north, trees become common, and the country has the aspect of a **savanna**, and scattered forests then begin to appear. Rain occurs in summer, beginning in October. On the tableland in the north the climate is healthy, and not unlike that of southern Europe. The chief exports are **coffee**, **rubber**, and **palm oil**. Cotton has been introduced with success. The capital is **Loanda**, which possesses one of the few good harbours in West Africa.

THE CAMEROONS. In the Cameroons the undulating level of the

[1] Formerly German South-west Africa. It is now governed by the Union of South Africa.

African plateau is broken by **volcanic mountains** over 12,000 feet above sea-level. The low coast-line is fringed with mangrove swamps, while most of the interior is densely forested. The products are mainly from the forests, and include **palm oil**, **rubber**, and **coffee**. The largest town and chief port is **Duala**.

NIGERIA. The coast is low, swampy, mangrove-fringed, and very unhealthy, but farther north the land rises fully 6000 feet above sea-level, and is dry and healthy. The country is drained by the **Niger** and its important tributary the **Benue**. On both of these rivers trading steamers ply to a distance of several hundred miles from the sea. In the north-east the rivers flow to the swamps of **Lake Chad**, where the spheres of influence of Britain and France meet.

In the Niger delta by far the most important tree is the oil-palm, and this district produces the finest **palm oil** in Africa. **Rubber** and **nuts** are also exported. In recent years minerals have been found, particularly **tin**, but they are still almost unworked. The trade of Nigeria is much greater than that of any other of the British colonies of West Africa. The capital is **Lagos**, an important trading town on the coast. A railway runs from Lagos to **Kano**, a busy inland town. The more civilised natives of the interior are nearly all Mohammedans, and have for centuries carried on trade with the Mediterranean by means of camel caravans that cross the Sahara.

THE GOLD COAST COLONY. Between Nigeria and the British Gold Coast Colony intervene Dahomey (French) and Togoland, both similar in physical features and productions to Nigeria. The Gold Coast Colony is comparatively flat, hardly any of it reaching 2000 feet above sea-level. In consequence, the climate is almost everywhere excessively unhealthy. In addition to the usual products of tropical West Africa (palm oil, rubber, and nuts), large quantities of **cocoa** are produced, and **gold** in the form of gold-dust is a valuable export. In recent years, in addition to the gold dust from the rivers, the crushing of gold-bearing quartz has been undertaken with satisfactory results. **Accra** is the capital, and the most important seaport and trading town.

LIBERIA. Liberia is a negro republic, of which no white man can become a citizen. It was originally a settlement for freed slaves from America. Most of the country is forested, and the products are typical of tropical West Africa.

SIERRA LEONE. The British colony of Sierra Leone is low and swampy along the coast, but much higher inland. On the coast, also, the rainfall is extremely heavy. The suitability of the climate to Europeans may be judged by the name given to the coast, "the white man's grave." The chief trade is in the forest products, palm oil, nuts, and india-rubber. The capital, and chief trading centre, is **Freetown**, on the finest harbour on the west coast of Africa.

THE GAMBIA. As we pass north to the British colony of the Gambia, the interior plateau of Africa diminishes in height and recedes farther from the coast. Much of the country is therefore low-lying. From this it follows that the River **Gambia** is much better suited for navigation than most African rivers. The climate is much more healthy than that of the West African colonies already mentioned, chiefly because the Gambia lies farther from the Equator. The most important products are **nuts** and **palm kernels. Bathurst** is the chief town.

THE FRENCH POSSESSIONS. The French have established a protectorate over an enormous extent of land in north and west Africa. Their territories stretch without a break over 40° of latitude, from the Mediterranean to the Congo south of the Equator. Most of the **Sahara** is under French influence. It is an immense desert region, mountainous in the centre, but mostly flat, and covered with sand-dunes. Where streams occur, or where wells have been successfully sunk in the Sahara, a fertile **oasis** is found, but it is constantly threatened by the moving sand-dunes of the desert. The north-west part of the Sahara adjoining Morocco is a Spanish possession, Rio de Oro.

The French colony of **Senegal** is similar in many ways to British Gambia. It is low-lying for a long distance inland, and the Senegal River is therefore a navigable waterway. The capital, **St Louis**, is situated at the mouth of the river. It exports the products

from the surrounding plantations, and also gums from the Sahara. **French Guinea** lies between Sierra Leone in the south, and Portuguese Guinea in the north. **Rubber** and **nuts** are the chief products. A considerable part of the trade of the upper Niger now passes to the coast through this colony. The French possessions of the **Ivory Coast** and **Dahomey** are similar in most respects to the other states along the Gulf of Guinea. The coast is low, mangrove-fringed, and beaten by a dangerous surf. **Palm oil**, **gold**, **nuts**, and **rubber** are the chief exports. The climate is extremely unhealthy. In the **Sudan** the French possessions include most of the upper basin of the Niger, and in the east are continuous with the **French Congo.**[1] The most notable town on the Niger is **Timbuktu**, which has long been an important centre for caravan trade across the Sahara. The French Congo is similar in most respects to the Belgian Congo, although its trade is not yet nearly so large. The capital is **Brazzaville**, on the Congo, and the chief port is **Loango.**

THE ISLANDS OF AFRICA.

MADAGASCAR. The French colony of Madagascar is over 200 miles from the east coast of Africa, and is situated in the tropics, except for a small part in the south. The island is nearly twice as large as Britain. The interior is mountainous, the highest peak rising nearly 9000 feet above sea-level. The capital of Madagascar is **Antananarivo**, situated on the healthy interior uplands. The chief occupations of the people are cattle-rearing and agriculture.

MAURITIUS. Five hundred miles east of Madagascar is the British colony of Mauritius, which includes the island of that name and several other islands. **Sugar** is by far the most important product. Most of the inhabitants are Indians, who have supplanted negroes on the sugar plantations. The capital is **Port Louis**, which has a good harbour on the north-west coast. The neighbouring volcanic island of Réunion is a French possession.

[1] The official name is now French Equatorial Africa.

ISLANDS OF THE ATLANTIC. In the South Atlantic Ocean are the islands of **St Helena**, **Ascension**, and **Tristan da Cunha**, all British possessions. They are of volcanic origin, and are of little commercial value. **Prince's Island** and **St Thomas** are Portuguese possessions in the Gulf of Guinea, and close to the Equator. They export large quantities of **cocoa**, as well as coffee, rubber, and cinchona. The **Cape Verde Islands**, which belong to Portugal, are a volcanic group in the Atlantic, 400 miles off the west coast of Africa. The **Canary Islands** belong to Spain. They are volcanic in origin, and fruit and wine are produced. Large quantities of early vegetables are sent to London. The splendid volcanic cone of **Tenerife** rises to a height of 12,000 feet above the sea. Farther north are the **Madeira Islands**, which belong to Portugal. The climate is one of the finest in the world. Fruit is grown, and Madeira wine is made. **Funchal**, the chief town, is a port of call for South African steamers. The **Azores**, which also belong to Portugal, lie some 700 miles west of Lisbon. They are volcanic islands, and one of the peaks is over 8000 feet high. Dairy-produce, wine, and fruit are the chief productions. Oranges and pine-apples are the principal fruits.

AMERICA

NORTH AMERICA

RELIEF. North America extends from far within the Arctic Circle to less than 10 degrees from the Equator, and furnishes examples of almost every type of climate and geographical structure. From the map facing p. 168 it will be seen that the most prominent orographical features are two mountain systems, the **Appalachian Mountains** in the east, and the Western Cordillera, or **Pacific Mountain System**, in the west. Between these highland areas is a broad **belt of lowlands**, stretching continuously from the Arctic Ocean to the Gulf of Mexico.

Coastal Plains. Round the shores of the continent the land slopes to the sea in a series of coastal plains. These are best developed in the east, and are rich, agricultural districts. Their gentle slope is continued under the sea until the water is about 100 fathoms deep, when the **slope suddenly increases** until depths of about 2000 fathoms may be reached.

Continental Shelf. This extension of the coastal plains beneath the sea is called the **continental shelf**. It varies in width from 5 miles east of Yucatan to 500 miles east of Newfoundland, where it forms the valuable fishing-grounds known as the **Newfoundland Banks**. On the Pacific side the continental shelf is generally much narrower, and on its seaward border the ocean depths are generally much greater.

Appalachian Mountains. The Appalachians[1] were of special

[1] The middle part of the Appalachians, in Pennsylvania and Virginia, is sometimes known as the Allegheny Mountains, but this name has disadvantages.

importance in former times, because they formed an effective **barrier** between the early settlers and the rich plains of the interior. This can be readily understood from the fact that the mountainous country stretches with hardly a break for nearly 1000 miles, and in places is over 100 miles wide. Three belts can be clearly distinguished in crossing the Appalachian Mountains, the **Older Appalachian Belt**, the **Ridge and Valley System**, and the **Allegheny Plateau.**

The coastal plain between the Appalachians and the Atlantic is wide in the south, but narrows farther north until the Appalachians run out to sea in the New England states. Look at the strong contrast between the coast-line in the north and that in the south of the United States. The rugged coast-line of New England, with its good harbours, marks where the rugged structures of the Appalachians reach the sea. North of the St Lawrence the mountains are known generally as the **Laurentian Highlands.**

Prairies. West from the Allegheny Plateau across the Mississippi there stretch broad, rolling plains, originally treeless, but covered with rich grass. These plains are called the **Prairies**, and now form some of the finest agricultural land in America. It is the grain district both of the United States and of Canada.

Great Plains. As we pass westward from the Prairies the country changes. The altitude gradually increases, the rainfall becomes scantier, the vegetation is sparser, and the country is more fitted for grazing than for growing crops. This district is known as the **Great Plains**, although where it borders the Pacific Mountain System the plains are 5000 or 6000 feet above sea-level, and might therefore be called plateaus. Parts of the Great Plains (particularly in Dakota) have been deeply trenched by rivers, which have left the intervening land as high blocks, extremely difficult or impossible to cross, and often quite bare of vegetation. These parts were called the "Mauvaises Terres" by the early French explorers, and are now known as the **Bad Lands.**

Pacific Mountain System. West of the Great Plains the land suddenly rises into the high ranges of the **Pacific Mountain**

System. Only the eastern chains that overlook the Great Plains should be called the **Rocky Mountains.** The system consists of mountain-ranges, high plateaus, and basins of internal drainage, and is **1000 miles wide** at its broadest part. The most important ranges in the western part of the system are the **Cascade Mountains**, continued south as the **Sierra Nevada.** The peaks of the Sierra Nevada have been carved out of great tilted blocks of the earth's crust, and present a steep escarpment to the east and a gentler slope to the west. The highest mountains of the United States are in these ranges. **Mount Whitney**, in the southern Sierra Nevada, and **Mount Rainier**, in the Cascades, are both over 14,500 feet in height. Farther west, and closely bordering the Pacific coast, there is a belt of mountains called the **Coast Range.** This range can be traced from southern California far into Canada.

Between the Sierra Nevada and the Rocky Mountains is an extensive area of inland drainage called the **Great Basin.** The rivers flow into lakes that have no outlet to the sea, and are therefore salt. The largest of these lakes is the **Great Salt Lake.** Much of the Great Basin is practically a desert land, the only vegetation being scattered tufts of sage-brush. In the north it is several thousand feet above sea-level, but in the south-west it differs from every other part of North America in that it sinks **below sea-level.** It is crossed by several mountain-ranges, known as the **Basin Ranges.**

North of the Great Basin is a tableland called the **Columbia Plateau.** It is drained by the Columbia River and the Snake River, the latter of which has canyons over 4000 feet deep. Much of the plateau consists of enormous stretches of bare, volcanic lava. South-east of the Great Basin is the **Colorado Plateau**, drained by the Colorado River. The river has cut a deep channel far down into the rocks of the plateau, thus forming a **canyon.** The canyons of the Colorado are the most stupendous in the world.

CLIMATE. 1. Temperature. The climate of North America is naturally determined largely by the latitude, for the land

NORTH AMERICA - OROGRAPHICAL

John Bartholomew & Son, Ltd., Edin.

Bonne's Projection

English Miles

0 250 500 1000

stretches from the Arctic Circle to the Tropics. By far the greatest part of North America, however, lies in the **temperate zone.** Most of the country is subject, however, to **great and rapid changes of temperature.** This is due to the direction of the mountain-ranges, and to the fact that practically all the central part lies quite open and unprotected, either from the north or the south. Sudden "heat waves" and "cold waves" are therefore much more common and much more severe in America than in Britain.

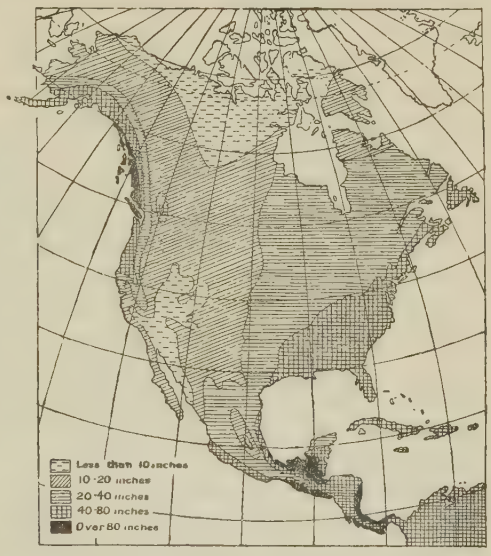


FIG. 84.—Rainfall Map of North America.

As is the case with all the continents, the eastern coasts are much more **extreme** than the western. Labrador, in the same latitude as Britain, has one of the severest climates in the world. The difference in temperature between the east and the west coasts of North America is increased by a warm current from the south-west that washes the Pacific shores, while a cold Arctic current creeps down the Atlantic coast.

2. Winds. The **prevailing winds** of most of North America are **westerly**, but the south (beginning about Mexico) is in the region of the north-east trade-winds. In winter there sometimes blows from the Pacific Mountains across the Great Plains a warm, dry wind, called the **Chinook**, which causes the snow to disappear with wonderful rapidity. The West Indies and the Gulf of Mexico are

occasionally visited by frightful **hurricanes**, similar to the typhoons of the China seas.

3. **Rainfall.** The rainfall is determined largely by the prevailing winds. In middle latitudes and on the north the west coasts have a plentiful rainfall. The interior is shut off from the moist west winds by the Pacific Mountains, and therefore large areas are very dry. Thus many parts of the Great Basin, and the plateaus north and south of it, are barren deserts. The east coasts have a sufficient rainfall, because they are influenced by the unsettled weather conditions that come from the Gulf of Mexico and the Atlantic. In Mexico and Central America, owing to the prevailing wind, the rainfall is much heavier on the east coast than on the west.

VEGETATION. Bordering the Arctic Ocean are the **Tundras**, presenting the same characters as in northern Europe and Asia. The Tundras gradually merge into the **coniferous forest** belt, which stretches from the Arctic Circle south-east round the shores of Hudson Bay and the Great Lakes. On the east and on the west, the coniferous forests merge into two other forest belts, that coincide roughly with the Eastern and the Western Mountains. The trees of these forests, however, are **deciduous**, and furnish the most valuable woods of America. The giant trees of California are especially famous.

The Prairies were originally grass-lands, but now form the "**grain belt**" of North America, stretching from the Mississippi valley, past the Great Lakes, through Manitoba, and far to the north-west of Canada. West of the Prairies there are great areas of fairly good pasture-land. The Great Plains form, therefore, the chief **cattle-grazing** districts of North America. In the most arid parts there is little grass. The commonest plant is the **sage-brush**, which occurs in tufts at intervals. On the dry plateaus, particularly in Mexico, the **cactus** is very typical.

ANIMALS. In the far north the fur-bearing animals are most important. This part of North America has been explored chiefly by the hunters and trappers of various companies. The famous Hudson Bay Company, which practically ruled the north of

America for many years, was almost entirely a fur-trading company. A few of the chief fur-bearing animals are the beaver, the sable, the bear, the fox, and the ermine. Round the coast, seal-hunting is important. **Bisons** used to live on the prairies in herds of over a million, but they have been slaughtered till they are almost extinct. The shaggy **musk-ox** inhabits the Arctic regions, and was found by Peary even on the north coast of Greenland. Another inhabitant of the far north is the **caribou**, an American variety of the reindeer. The **moose**, the largest of the deer tribe, has been driven into the inaccessible parts of the country. Bears are not uncommon. The **grizzly** is confined to the Western Mountains. The **jaguar** and the **panther** are the largest of the cat tribe. The former is confined chiefly to Central America, but the panther is found throughout the whole length of the Western Mountains. The **opossums** are especially interesting, for they are the only pouched animals found outside Australasia. The presence of pouched animals can only be explained by the existence in former times of a land connection between America and Australia.

BRITISH NORTH AMERICA.

EXTENT. The area of British North America is nearly **thirty times** that of the British Isles. In fact, Canada is nearly as large as the continent of Europe. In the north it extends far within the Arctic Circle, while the most southerly part of Ontario is farther south than any part of France.

RELIEF. The **Laurentian Highlands** stretch from the St Lawrence to Hudson Strait, and form a **rugged plateau.** In the west the mountains form part of the **Pacific Mountain System** (or Western Cordillera). **Four** distinct chains can be recognised. The most easterly is formed by the **Rocky Mountains**, which in a few points reach a height of 13,000 feet. On the west the Rocky Mountains are bounded by a long valley, which is occupied by the headwaters of the Fraser River and the Columbia River. Then come the **Gold Mountains**, the best-known part of which is called the

Selkirk Range. This is the part crossed by the Canadian Pacific Railway, and with its beautiful lakes, canyons, and glaciers, it presents the most magnificent mountain scenery in America. Farther west the **Coast Mountains** are a continuation of the Cascades of the United States. Finally, a partially submerged range forms the island of Vancouver, and other islands along the coast. On the borders of Canada and Alaska there are several peaks of great height. **Mount St Elias** is 18,000 feet, and **Mount Logan** is over 19,000 feet. In Alaska (U.S. territory), **Mount McKinley**, the highest mountain in North America, reaches an altitude of over 20,000 feet.

RIVERS AND LAKES. There are four main drainage areas. The rivers may flow into the Atlantic Ocean, Hudson Bay, the Arctic Ocean, or the Pacific Ocean. The Hudson Bay drainage basin is the largest. In the Atlantic basin the chief river is the **St Lawrence**, which drains the Great Lakes of America, **Superior**, **Huron, Michigan, Erie**, and **Ontario**. Between Lakes Erie and Ontario, the famous **Niagara Falls** (160 feet high) pour their waters into a deep gorge formed by the backward cutting of the waterfall, which amounts to over four feet every year. The St Lawrence is navigable for ocean steamers up to Montreal. River steamers can ascend to Lake Superior, avoiding falls and rapids by eight canals. The most important are the **Welland Canal**, and the **Sault** (Soo) canals, between Superior and Huron, the tonnage passing through which every year is greater than that through the Suez Canal.

The **Saskatchewan** from the Rockies, and the **Red River**, from the United States, flow into **Lake Winnipeg**. The lake is drained by the **Nelson** River flowing into Hudson Bay. The chief river flowing to the Arctic Ocean is the **Mackenzie**, which receives the surplus waters of Lake Athabasca, Great Slave Lake, and Great Bear Lake. The principal river of the Pacific coast is the **Fraser**. The **Yukon** is the chief river of Alaska. Several hundred miles of its course are in Canada.

Look carefully at the distribution of the lakes of North America. Notice that while there are innumerable lakes in Canada, south of the Great Lakes there are comparatively few. The cause of this is to be

found in the fact that great glaciers once covered the northern half of North America. After they melted, their moraines completely altered the former drainage of the country, and owing to the blocking of the rivers and the hollowing out of the land, many lakes were formed.

CLIMATE. Canada may be described generally as a land of hot summers and cold winters, that is, its climate is **continental.** Three main divisions may be recognised. (1) In the east the rainfall is ample, and the range of temperature between summer and winter is great. (2) In the centre the range of temperature is very great, but the rainfall is scanty. (3) Along the Pacific coast the rainfall is plentiful, and the range of temperature is not great. This part has a maritime climate. In the interior most rain falls in summer, when it is of most use to the farmer. The cold winters are a hindrance to navigation. The St Lawrence is closed by ice from December till the end of April.

PRODUCTIONS. Agriculture is by far the most important industry in Canada. The rich soil of the prairies forms a splendid land for the growing of **wheat** and other grains. Manitoba and Saskatchewan are the chief wheat centres, but new ground is being rapidly taken up. Taking an average of several recent years, Canada has ranked **first** among the countries sending wheat to Britain. **Dairy-farming** and the rearing of **cattle** are very important. **Animal produce** (including bacon, lard, eggs, cheese, and butter) ranks after wheat and flour in the list of exports. The forests of Canada are a source of great wealth to the nation, and **lumbering** is one of the chief industries. The timber is obtained chiefly from the eastern provinces (Quebec, New Brunswick), and from British Columbia. In addition to timber, large quantities of **wood-pulp** are exported.

The south of Ontario is a famous **fruit** district. Even wine is produced here. Fruit is also largely grown in British Columbia. The **fisheries** along the east coast are very valuable. The **Grand Banks,** south-east of Newfoundland, form the most valuable cod-fishing centre in the world. After cod, salmon and lobster are the most

important. The canning of salmon is largely carried on in British Columbia. As might be expected, the chief manufacturing industries are **flour-milling**, **wood-working**, and **leather** manufactures. Iron and steel working and textile manufactures, however, are growing very rapidly.

MINERALS. Although agriculture is the principal occupation of Canada, the mineral resources are large and valuable. **British Columbia** and **Ontario** are the chief mineral-producing provinces. Arranged in order of importance, the chief minerals produced in 1926 were as follows:—**coal, gold, lead, copper, nickel, silver.** The chief coal-fields are in the north of **Nova Scotia** (particularly in Cape Breton Island), and in **British Columbia.** "Gold is obtained chiefly from **Ontario**, where very rich deposits have recently been discovered at Porcupine and Kirkland Lake. Ontario is now one of the greatest centres of gold production in the world, and has caused Canada to rank third among gold-producing countries. The Klondike field, once so rich, is now comparatively unimportant."

Copper is mined chiefly in **British Columbia.** Nickel is obtained from the district round **Sudbury**, Ontario. About nine tenths of the world's supply of nickel is obtained from this locality. In Ontario there occurs one of the richest silver-fields in the world, round the mining town of **Cobalt.** Canada now takes fourth place among the silver-producing countries of the world. There is another mineral, the bulk of which is produced in Canada. This is **asbestos**, and most of the world's supply is obtained from the province of **Quebec.** There are rich wells of **petroleum** in Alberta, and other minerals characteristic of Canada are corundum and mica.

PROVINCES AND TOWNS. NOVA SCOTIA, which includes Cape Breton Island, lies in the same latitude as southern France. The climate is damp, and fogs are common along the east coast. **Fishing** (cod and lobster chiefly) and **dairy-farming** are the chief industries. The mining of **coal** and **gold** is also important. **Halifax**, on the east coast, is the capital, and has a splendid harbour, which is

generally free from ice throughout the year. It is the principal **naval station** in British North America. **Sydney**, on Cape Breton Island, possesses the largest **iron and steel** works in Canada.

PRINCE EDWARD ISLAND is fertile, and **agriculture** is the most important occupation. The **fisheries** are also very valuable. **Charlottetown**, the capital, is situated on a fine harbour on the south coast.

NEW BRUNSWICK is densely forested, and, therefore, **lumbering** is the chief occupation. The **fisheries** are also very valuable, and in recent years **farming** (particularly dairy-farming) has made rapid strides. The largest town is **St John**, which has a fine harbour that is open all winter. It has a large trade in live stock and dairy-produce.

QUEBEC is nearly six times the size of the British Isles, but only the south of it is well populated. **Agriculture** is the chief industry. All kinds of grain and fruit are grown, and dairy-farming is largely carried on. The forests are very extensive, and so **lumbering** is important. **Asbestos** is the chief mineral. The inhabitants of this province are largely of French origin, and a dialect of the French language is still more common than English. **Montreal**, at the junction of the River Ottawa with the St Lawrence, is the largest city and the principal seaport of Canada. It is situated at the **head of ocean navigation**, and is, therefore, a great trading centre. It is the principal eastern terminus of the Canadian Pacific Railway. **Quebec**, the capital of the province, was founded by the French over three hundred years ago (1608), and the inhabitants are still chiefly of French descent.

ONTARIO contains most of the population of Canada, and is the wealthiest of all the provinces. The people are engaged chiefly in **agriculture**, and the rich soil and good climate of the south of Ontario have given this district the name of the "garden of Canada." All kinds of fruit are grown, and even wine can be produced. **Lumbering** ranks next to agriculture in importance. The rich deposits of **nickel**, **silver**, and **petroleum** have already been mentioned. The capital of the province, and the second city of

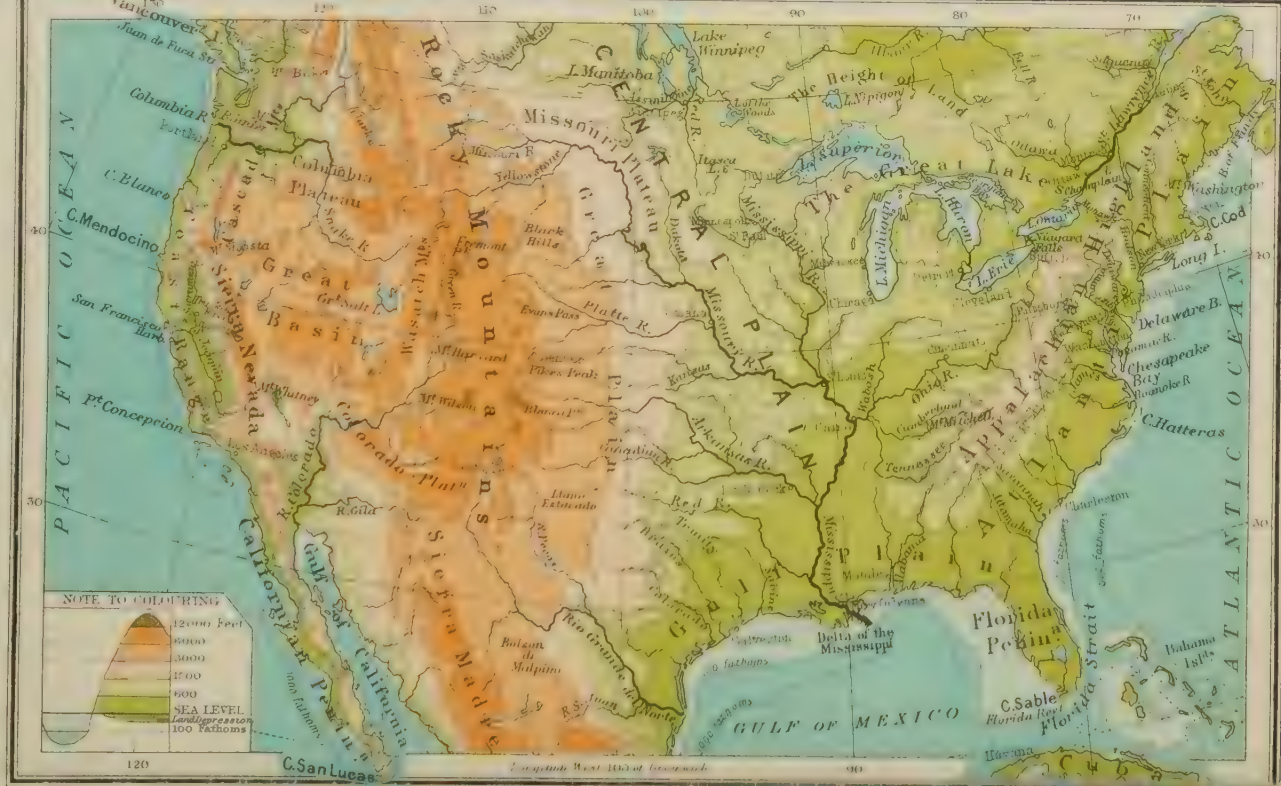
Canada in size, is **Toronto**. It has an excellent harbour on Lake Ontario. From it diverge the railways that serve the rich peninsula of south Ontario. There are important manufactures of **agricultural implements**. **Ottawa**, on the Ottawa River, is the seat of government of the Dominion, and is the greatest **lumbering** centre in Canada. At the west end of Lake Ontario is **Hamilton**, a busy town engaged in iron-working and other manufactures.

MANITOBA contains the finest wheat-lands in Canada, although its total crop is now surpassed by that of Saskatchewan. The capital is **Winnipeg**, the greatest railway centre in the Dominion and the third largest town. The population, which in 1901 was 42,000, had grown to 178,000 in 1921.

SASKATCHEWAN and **ALBERTA** were created provinces in 1905, and include the districts formerly known as Saskatchewan, Alberta, Assiniboia, and Athabasca. The growing of wheat and other grains is being rapidly extended in both provinces. In the western districts the chief occupation is **cattle-ranching**. The capital of Saskatchewan is **Regina**, and the capital of Alberta is **Edmonton**, which is rapidly becoming an important railway centre.

BRITISH COLUMBIA is the largest province in the Dominion, being about four times the size of Great Britain. Its **minerals** and its magnificent **forests** form its chief sources of wealth. **Coal** is mined in Vancouver Island and in the Rocky Mountains. **Gold**, **silver**, and **copper** are also largely worked. The chief mining town is **Rossland**. There are large exports of **timber** and of **tinned salmon**. The capital is **Victoria**, situated on a good harbour on Vancouver Island. The town of **Vancouver**, on the mainland, is the terminus of the Canadian Pacific Railway. Its fine harbour has regular communication with Japan and Australia.

The northern territories of Canada are very sparsely populated. Their chief wealth consists in the valuable **furs** obtained from them. In the gold district of Klondike, the chief town is **Dawson**. The islands of the Arctic Archipelago are interesting, chiefly from their association with so many famous Arctic explorers, whose names have been given to the channels and islands of that region.


UNITED STATES OROGRAPHICAL
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
Vancouver I.
Juan de Fuca Str.
Columbia R.
C. Blanco
C. Mendocino
San Francisco Bay
Pt. Conception
C. San Lucas
California Pen.
Gulf of California
Cascade Mts.
Sierra Nevada
Great Basin
Great Salt L.
Columbia Plateau
Rocky Mountains
Colorado Plateau
Colorado Plain
Sierra Madre
Missouri Plateau
CENTRAL PLAIN
Great Plains
Lake Winnipeg
L. Manitoba
The Height of Land
L. Superior
The Great Lakes
L. Michigan
L. Huron
L. Erie
L. Ontario
Niagara Falls
Appalachian Mts.
Appalachian Plateau
Atlantic Plain
Florida Penin.
Florida Strait
Bahama Isls.
Cuba
C. Sable
Delta of the Mississippi
C. Hatteras
Chesapeake Bay
Delaware B.
C. Cod
Long I.
Rio Grande del Norte
Red R.
Missouri R.
Mississippi R.
Ohio R.
Yellowstone R.
Platte R.
Arkansas R.
Colorado R.
Gila R.
Snake R.
Columbia R.
Saskatchewan R.
Black Hills
Evans Pass
Pikes Peak
Mt. Hayden
Mt. Wilson
Mt. Whitney
Mt. Shasta
Mt. Fremont
Bolson de Mapimi
Laguna Madre
NOTE TO COLOURING
12000 Feet
6000
3000
1500
600
SEA LEVEL
Land depression
100 Fathoms
100 fathoms
Longitude West 105 at Greenwich
120
110
100
90
80
70
40
30

NEWFOUNDLAND (with the coast of Labrador) forms a separate colony, not included in the Dominion of Canada. By far the most important industry is **fishing**. Cod and lobsters are obtained from the Grand Banks. In spring, large fleets put out to hunt the seals that drift on the ice-floes from the north. **Iron-ore** occurs in enormous deposits, that have the advantage of being worked by open quarrying instead of deep mining. The capital is **St John's**, on a splendid harbour on the east coast. It is nearer Europe than any other seaport in America.

The **BERMUDAS** are a group of small coral islands, 800 miles south of Nova Scotia. The climate is remarkably mild and temperate. Early vegetables are grown and exported to New York. The mild climate makes the Bermudas a winter resort for invalids and wealthy Americans.

RAILWAYS. The chief trans-continental railway in Canada is the **Canadian Pacific**. The main line runs north of Lake Superior to Winnipeg, crosses the Rockies by the Kicking Horse Pass (5300 feet) and terminates at Vancouver. A very important branch from Moose Jaw (west of Regina) crosses into the United States and taps the large grain-traffic of Minneapolis, then crosses to Canada again by the Soo, and joins the main line at Sudbury. A new Canadian trans-continental railway, the **Grand Trunk Pacific**, was completed in 1914. From Edmonton it crosses the Rockies by the Yellowhead Pass (3700 feet), and terminates at Prince Rupert in British Columbia. By means of the new Hudson Bay route, with its terminus at **Fort Churchill**, the distance from the great wheat areas to Liverpool will be shortened by nearly 1500 miles, compared with the former route by the Great Lakes.

THE UNITED STATES.

RELIEF. The main features of the relief of the United States have already been described, and are shown in the map opposite.

RIVERS. The rivers of the Appalachian belt should be carefully traced, because their valleys cut through the mountains and form

easy natural routes from the Atlantic to the interior. Of these the easiest route across the Appalachians is formed by the valley of the **Hudson**, and its tributary the **Mohawk**. This is the **most important natural route** in America, and at its highest part is less than 500 feet above sea-level. Farther south, the **Delaware** River flows into Delaware Bay. Into Chesapeake Bay flow the **Susquehanna**, the **Potomac**, and the **James**. The **Mississippi** is the greatest waterway in North America. Its largest tributaries, the **Missouri**, the **Ohio**, the **Arkansas**, and the **Red River** are also navigable for hundreds of miles. The rivers of the Pacific slope are more interrupted by rapids and falls. Notice particularly the **Sacramento**, which waters the fertile valley of California.

CLIMATE AND PRODUCTIONS. In many respects the climate of the United States resembles that of Canada. There is a belt along the Pacific coast with an equable or maritime climate and a high rainfall. The east coast is more extreme, but has also an ample rainfall. The most significant factor in the climate is that the rainfall of the interior diminishes as we pass west, until agriculture without irrigation is impossible. The average rainfall of the whole of the United States is 29·4 inches. In parts of the Pacific coast the rainfall is over 100 inches per annum.

Broadly speaking, we may distinguish three main zones of the country according to the crops. In the north is the **wheat** area, chiefly south and west of the Great Lakes. It will be remembered that Britain imports more wheat from the United States than from any other country. In the middle states the chief crop is **maize**. This is the most important of all the grain crops. It is largely used as food for live stock, so that the great quantities of cattle and meat exported from the United States represent, to a large extent, the maize crop changed into flesh-food. In the southern states the most important crop is **cotton**, but **rice** and **sugar** are also grown. The United States produce more **tobacco** than any other country in the world. About 80 per cent. of Britain's supply comes from there. It is grown in all the southern states. The chief **fruit** district is California, where **wine** is now being produced in con-

siderable quantity. The Pacific states also grow large quantities of grain.

MINERALS. The United States produce more coal, iron, and copper than any other country in the world. The chief **coal** state is Pennsylvania, which yields 60 per cent. of the total quantity raised. The richest **iron-ore** deposits are found in the region west and south of Lake Superior. **Copper** is obtained from the peninsula jutting north like a finger into Lake Superior, and also from Arizona and Montana. The **petroleum** output of the United States is rivalled only by the oil-fields of Transcaucasia. The chief oil region was formerly a belt in the west of Pennsylvania, which stretches north into New York and south into West Virginia. This has now been surpassed by the oil-fields of California and Texas. **Gold** is obtained from California and Colorado chiefly, while **silver** and **lead** (which are nearly always found together) are mined in Colorado, Nevada, and Montana.

NEW ENGLAND. New England comprises the region east and north-east of New York state. The Appalachian belt here runs out to sea, so that the coast-line is rugged and has numerous indentations that form good harbours. The rivers abound in waterfalls and rapids, and these have been greatly used as a **source of power**, and have made New England the **greatest manufacturing region** of America. Steam power is, of course, also used to a large extent. **Boston** (Mass.) is the most important town of the region and a great **seaport.** It is the principal centre of literature and science in America, and contains the most famous university in the country, Harvard University. Another important seaport is **Portland** (Me.). It exports lumber, fish, and ice. New England is the chief seat of the **textile** manufactures of the United States. **Fall River** (Mass.) is the largest **cotton** centre. Throughout New England there are numerous towns engaged in all branches of the **iron** industry. Watches, agricultural implements, tools, cutlery, typewriters, and **labour-saving and automatic machinery** of every kind are made. **Providence** (R.I.) and **Hartford** (Conn.) are among the most important of these manufacturing towns.

NEW YORK. The city of New York, with its five millions of inhabitants, is the second largest city and the second largest seaport in the world. It is the great commercial centre of America, and has important manufactures as well. The city is built chiefly on **Manhattan Island** at the mouth of the Hudson River, and has a fine harbour and many miles of wharves. In this respect, however, it is not superior to Boston and Philadelphia. The other and the most vital factor in its growth is its situation at the end of the **easiest route across the Appalachian barrier.** The traffic of the rich states west of the mountains comes and goes through the easy passage formed by the **Hudson-Mohawk valley.**

ATLANTIC COASTAL PLAIN. Most of the large cities of the east coast are situated at the junction of the Coastal Plain with the older Appalachian Belt.

Philadelphia (Pa.), with a population of one and three-quarter millions, is the third city of America. As a seaport it takes fourth place, ranking after New Orleans. It is situated at the junction of the Delaware and the Schuylkill, and the water-power of the Schuylkill from the earliest times made Philadelphia a great manufacturing centre. The most important industries are **woollen manufactures, shipbuilding, and engineering.**

Baltimore (Md.) has a good situation near the head of Chesapeake Bay, and near the valleys of the Susquehanna and the Potomac, which offer fairly easy routes to the interior. Baltimore is the most northerly port of the cotton-growing states, and besides exporting the raw material has cotton manufactures. **Washington** (D.C.), on the estuary of the Potomac, is the capital of the United States. It contains many fine government buildings, and is the second seaport of the country. **Richmond** (Va.), on the James River, is a great **tobacco** port. **Charleston** (S.C.) is a large **cotton** port of the Atlantic Coastal Plain.

THE LAKE STATES. The region round the Great Lakes is one of the most fertile in America. Before it was cultivated it formed the most typical prairie-land of the country. Now it produces immense crops of wheat and maize. Great herds of cattle also are

reared on these plains. In addition, the most valuable fields of copper and iron in America lie round the Great Lakes, so that the lakes form the greatest highway in the world for grain and ore.

The most important town of all this region is **Chicago** (Ill.), with a population of over two and a half millions. It lies at the south end of Lake Michigan, so that all the traffic coming from the rich lands lying to the north-west must pass through or near Chicago, in order to get round the south end of the lake. The city is also the natural centre of the **grain** and **meat** region that surrounds it. Finally, it is a convenient centre for the distribution of the manufactured articles from the east, and the collection of the raw materials from the west. It is the greatest meat and flour market in the world.

Another large port on Lake Michigan is **Milwaukee** (Wis.). Its trade is similar to that of Chicago, but much of the grain is needed to supply the large **breweries** of the town. At the west end of Lake Superior is **Duluth** (Minn.), which ships great quantities of **grain** and **iron-ore**. **Detroit** (Mich.) owes its importance to the fact that it stands at the crossing of waterways through the Great Lakes, and of railway routes from the United States to Canada. **Cleveland** (O.) is on the direct route between the iron districts of Lake Superior and the coal of Pennsylvania. It has in addition local supplies of coal, so that a large **iron** industry has grown up in the town. It is also a great **petroleum** market. **Buffalo** (N.Y.), at the eastern extremity of Lake Erie, is situated where much of the trade of the Great Lakes is transferred to land on its way to the coast.

THE MISSISSIPPI BASIN. The Mississippi Basin comprises some of the richest parts of the United States. The river forms one of the chief trade routes of America. Its value is increased by the fact that it flows north and south, and therefore connects regions that have very different productions. At the head of navigation stands **St Paul** (Minn.). Just above it is **Minneapolis** (Minn.). This city is in the centre of the grain district, and it has at hand abundant water-power in the Falls of St Anthony, and therefore it now ranks as one of the greatest **flour-milling** cities in the world. **St Louis**

(Mo.), the fourth largest city of the United States, has a fine situation just below the junction of the Mississippi and the Missouri. It is the trading-centre of a rich **grain** and **live-stock** district, and is a very important railway centre. In these respects it resembles Chicago.

The Ohio is navigable for large steamers as far as **Pittsburgh** (Pa.), the centre of a district extremely rich in **coal**. At first local iron-ores were used for smelting, but although these have long been exhausted, the town remains the greatest centre of the **iron** and **steel** trade in America. It has also a valuable **petroleum** industry. **Cincinnati** (O.), on the Ohio River, has benefited from its favourable situation for traffic by river and by rail. It has a large trade in **pork**.

New Orleans (L.) is situated on the delta of the Mississippi. It stands on the only distributary of the river that is navigable for large vessels. It is now the third seaport of the United States, and the second **cotton** port in the world. Its only rival on the Gulf of Mexico is **Galveston** (Tex.), the world's greatest **cotton** port.

THE WESTERN STATES. It was the presence of minerals in the western states that first led to their development. In 1849 and succeeding years a rush of gold-seekers to California took place. The rapid exhaustion of the richer diggings and the great increase of population made many of the incomers turn to other branches of industry, so that the agriculture of California is now much more valuable than its gold. Here and there along the Western Mountains there are busy mining towns, but the large cities are all on or near the Pacific coast. Of the mining towns, **Denver** (Col.) is the most important. Smelting and metal-refining are carried on. **San Francisco** (Cal.) is the greatest port on the Pacific. It is situated where the fertile Valley of California opens to the ocean through the Golden Gate, and it has a magnificent harbour. Wheat, gold, fruit, and timber are exported. The petroleum industry is also rapidly rising in importance. **Los Angeles** is a larger city even than San Francisco. It is the centre of the great **fruit** district of southern California, and is a favourite residential place because of its splendid climate. The magnificent forests of the northern Cascades have

caused a great **timber** trade to grow up round Puget Sound. **Seattle** (Wash.) is the largest seaport on Puget Sound engaged in this trade. Another large seaport is **Portland** (Ore.), on the Columbia River. It exports large quantities of **timber, wheat,** and **salmon.** The falls of the river are made to furnish power for its great sawmills. Since

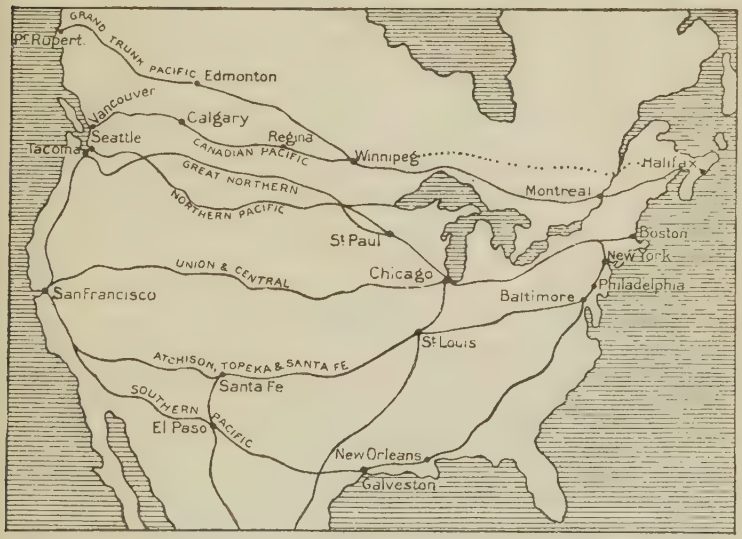


Fig. 35.—Trans-continental Railways of United States and Canada.

the Great War a large **shipbuilding** industry has developed in the Puget Sound seaports.

TRANS-CONTINENTAL RAILWAYS. The cities of the Atlantic coast are connected by numerous railway lines with the large towns of the Great Lakes and the Mississippi Basin. The most important of these routes start from Boston, New York, Philadelphia, and Baltimore, and connect with almost all the large cities of the interior. Study these lines carefully from the map.

MEXICO.

RELIEF. Mexico consists for the most part of a **high tableland**, from 6000 to 8000 feet above sea-level. The eastern and western edges of the plateau are known respectively as the **Eastern Sierra Madre**, and the **Western Sierra Madre**. The plateau is bordered on each side by a narrow **coastal plain**.

The plateau ends along a line drawn south of the Rio Grande de Santiago and Lake Chapala to Vera Cruz. This marks a **great fracture**, south of which the elevation of the land is much less. This fracture is accompanied by numerous active and extinct volcanoes, of which the highest are **Orizaba** (18,000 feet) and **Popocatepetl** (17,500 feet). **Yucatan** is a low, limestone peninsula, having a mean altitude of only about 100 feet above sea-level.

CLIMATE. About one-half of Mexico lies within the tropics. The seasons are therefore, on the whole, of a tropical type. There is a **wet season** from May to October, when rain falls almost every day, while in the **dry season** little or no rain falls. The rainfall is highest along the coasts. In many parts of the plateau the rainfall is not sufficient for agriculture without irrigation.

There are three well-marked zones of climate which pass gradually into one another. The lowlands along the coasts are known as the **hot zone**, the hill-slopes from about 3000 to 5000 feet comprise the **temperate zone**, and the high surface of the plateau is called the **cool zone**.

PRODUCTIONS. The low-lying ground is covered with dense tropical forests. Palms are the most conspicuous trees; the most valuable are mahogany and other cabinet woods. Tropical fruits, sugar-cane, fine coffee, and **cotton** are grown. Throughout Yucatan, sisal-hemp is of great importance. On the temperate lands, tobacco is largely cultivated. On the cool lands, maize and wheat are the chief crops. The most characteristic plant of Mexico is the cactus. On the surface of the plateau great herds of cattle are kept.

By far the most important mineral is **silver**, Mexico being the largest producer of silver in the world. The most striking feature

of recent years has been the development of the **oil-fields**, and much **petroleum** is now exported.

TOWNS. The capital and largest town is **Mexico**, situated on the plateau over 7000 feet above sea-level. It is a well-built city, and contains the finest cathedral in America. Railways connect the city with the United States, and a line with heavy gradients runs to the chief seaport of Mexico, **Vera Cruz**. Between Mexico and Vera Cruz is **Puebla**, the centre of a rich mining district.

CENTRAL AMERICA AND THE WEST INDIES.

RELIEF. The structure of Central America and the West Indies is quite different from that of the rest of the continent. In North America and in South America, the mountain systems run from north to south. In Central America and the West Indies, they run from **west to east.**

In its simplest outlines, Central America may be considered as comprising three regions :—

(1) A flat limestone plain in the north, extending from Yucatan into northern Guatemala and British Honduras ; (2) a line of high volcanic mountains bordering the Pacific Ocean ; (3) folded mountain-chains that run from west to east.

CLIMATE AND PRODUCTIONS. The range of temperature throughout the year is not great. Rain falls chiefly in summer, though the eastern coasts have also winter rains. As the country is exposed to the trade-winds from the north-east, the eastern slopes are rainier than the western. The tropical forests are exceptionally luxuriant, the most valuable tree being **mahogany.** Agriculture is the chief industry. The most valuable product is **coffee** of fine quality, which is grown on the hill-slopes, where **tobacco** is also cultivated. On the low, hot lands **cacao** is grown. Central America and the West Indies produce most of the world's supply of **bananas.** Like Mexico, the country is rich in **silver**, and to a less extent in gold, but these metals have hitherto been little worked.

STATES AND TOWNS. Central America is made up of six

republics, and the colony of British Honduras. The republics are: Guatemala, San Salvador, Honduras, Nicaragua, Costa Rica, and Panama.

The chief seaport on the east coast is **Belize**, in British Honduras, which exports mahogany and logwood. The largest town in Central America is **Guatemala**, the capital of the republic of Guatemala.

Fig. 86.—Central America and the West Indies.

COMMUNICATIONS. The **Panama Canal** is one of the most important routes in the world. It was constructed by the U.S. Government, between Colon on the Atlantic and Panama on the Pacific. The canal is 50 miles long, and lessens the voyage from the east coast ports of the United States to the west by over 8000 miles, and several other voyages are reduced by thousands of miles. The canal was opened in 1914.

THE WEST INDIES.

RELIEF. The West Indies may be considered as the **tops of gigantic mountain-ranges** that have been **partially submerged** in the sea. The mountains of Santo Domingo attain a height of over 10,000 feet above sea-level. But round the West Indies the depth of the sea in certain parts is extremely great.

The foundering of parts of the sea-bottom and the steepness of the submarine slopes have probably a close connection with the numerous **earthquakes** and **volcanoes** that occur in the West Indies. In 1902 about 30,000 people were killed in a few minutes by an eruption of Mont Pelée, in Martinique. In 1907 a dreadful earthquake wrecked the town of Kingston, Jamaica.

SUBDIVISIONS. The islands of the West Indies fall into three main groups.

(1) The large islands (**Greater Antilles**), the physical features and the rocks of which are very varied.

(2) The western islands of the **Lesser Antilles** (from Grenada to Dominica), which are of volcanic origin and are mountainous.

(3) The **Bahamas** and the eastern islands of the Lesser Antilles, which are composed chiefly of limestone and are very flat.

CLIMATE AND PRODUCTIONS. The West Indies have a tropical climate. The year may be divided into two seasons, the **dry season** from November to May, and the **rainy season** during the rest of the year. The north-east trade-winds blow strongly throughout the winter. Towards the end of the rainy season violent hurricanes are not uncommon.

Tropical plants of all kinds grow in profusion. Numerous **palms**, and **mahogany**, **logwood**, and other valuable trees, are found in the forest. The chief crop is the **sugar-cane.** The Great War brought unexampled prosperity to the cane-sugar industry of the West Indies. The **banana** is becoming very important. Cuba produces **tobacco** of high quality, and **arrowroot** is largely grown on many of the islands.

The largest and most important island is **Cuba**, which is a republic

under the protection of the United States. **Iron-ore** is mined, and there are rich deposits of **copper**. The chief crops are **sugar** and **tobacco**. **Havana**, the only large town in the West Indies, is situated on a fine harbour on the north-west coast. Its chief industry is **cigar-making**.

The island of **Haiti** (Hispaniola) is divided into the two negro republics of Haiti and Santo Domingo, both under the protection of U.S.A. Valuable woods, sugar, and coffee are produced, but the island is in a backward state owing to the lack of energetic white men. The chief towns are **Port-au-Prince** and **Santo Domingo**. The fertile island of **Porto Rico** is a possession of the United States. Sugar and coffee are the chief productions.

Of the British possessions, **Jamaica** is the most valuable. The island exports large quantities of fruits, chiefly **bananas** and **oranges**, to the United States and Britain. **Sugar** and **rum** are also important. The chief town is **Kingston**, on Port Royal, a fine harbour on the south-east coast. The **Bahamas** are British, and produce fruits, sisal-hemp, and cotton. Sponges are grown in the neighbouring seas. The island of **Montserrat** is noted for its lime juice. The British island of **Trinidad**, strictly speaking, should not be included in the West Indies, for it really forms an outlying part of South America. **Asphalt** is obtained in large quantities from the so-called Pitch Lake in the interior. **Sugar** and **cacao** are largely grown. Of the other islands, **Curaçoa**, belonging to Holland, is interesting because it produces the liqueur of that name.

SOUTH AMERICA.

POSITION AND RELIEF. South America lies mainly in the southern hemisphere, and extends in a north and south line for nearly 5000 miles. From the map facing p. 192 it will be seen that there are three main divisions of South America.

1. Eastern Highlands. The Eastern Highlands are divided into two parts by the Amazon. North of the river are the **Guiana Highlands**, which in the west attain a height of about 11,000 feet. South of the Amazon is the great mass of the **Brazilian Highlands**,

which have the structure of a **dissected plateau.** The average level of the plateau is between 3000 and 4000 feet. It rises gradually as it approaches the Atlantic, until it suddenly descends to the sea in a series of steep escarpments.

2. The Western Mountains. The western mountains, the Andes, are folded chains, and though not so high as the Himalaya, they form the longest mountain-barrier in the world. Several of the peaks are more than 20,000 feet high, the highest summit being **Aconcagua**, over 23,000 feet above sea-level. This mountain and **Chimborazo** (over 20,000 feet) are extinct volcanoes. **Sorata** (22,000 feet) is not volcanic. **Cotopaxi** (over 19,000 feet) is an active volcano.

3. Lowlands. The central lowlands contain the basins of the three great rivers of South America, the **Orinoco**, the **Amazon**, and **La Plata.** The sea at one time stretched continuously over this region, but the area has been filled up, chiefly by river deposits. Most of the rivers are navigable for long distances. Ocean steamers can ascend the Amazon for over 2000 miles.

RIVERS. The chief river of South America is the **Amazon**, which, though not the longest river in the world, carries a greater volume of water to the sea than any other. On the left bank the largest tributary is the **Rio Negro**, and on the right the **Madeira.** In Brazil the chief river is the **Sao Francisco.** The **Rio de la Plata** or River Plate is formed by the junction of the **Parana** and the **Uruguay.** The chief tributaries of the former are the Paraguay and the Pilcomayo.

CLIMATE. Most of South America lies within the tropics, so that the lowlands are generally very hot. Temperate conditions prevail only in the south, or where the altitude is sufficient to moderate the heat. South of the Equator, as far as the mouth of the River La Plata, the prevailing winds are the **south-east trades.** Farther south, westerly winds are the most common. In the latter region, therefore, the heaviest rainfall takes place on the **west** slope of the Andes, while the **east is dry.** On the other hand, between latitude 30° S. and the Equator the **eastern** slopes of the Andes are well watered, while the **western slope is practically a rain-**

less desert. This result is aided also by the off-shore winds, which blow the surface waters of the sea away from the west coast, and thus bring up colder water from below to join the cold **Peruvian current** that flows from south to north. Cold waters next a coast are of little use for rain-supply, since on-shore winds are warmed as they reach the land, and therefore do not deposit moisture.

Very dry (Less than 10 inches)
Light Rainfall (10-25 inches)
Moderate Rainfall (25-50 inches)
Heavy Rainfall (50-75 inches)
Very Heavy Rainfall (Over 75 inches)

FIG. 87.—Rainfall Map of South America

The equatorial belt is a region of excessively heavy rains. It is these rains that furnish the immense quantities of water carried by the Amazon and its tributaries.

VEGETATION. The heavy rains of the equatorial belt nourish the densest tropical forests in the world. Most of the Amazon basin is covered by these forests, which are called the **selvas.** **Rubber** is their most valuable product. North of the Orinoco stretch the savannas called the **llanos,** grassy plains with scattered trees, which are devoted to horse and cattle rearing.

South of the selvas is the **Gran Chaco,** or Great Hunting-ground, which forms a connecting link between the selvas and the **Pampas.** These are grassy plains with numerous salt lakes or marshes. Much of the Pampas can be used for grain crops, but in the south the

region is too dry, and becomes a typical **steppe** country. Immense herds of sheep and cattle are reared on the pampas, which is one of the most important **wool** and **meat** producing regions in the world. Still farther south the lowlands pass into the barren plains of Patagonia. The forested slopes of the Andes produce the invaluable **cinchona** tree,[1] from which quinine (Peruvian bark) is obtained. **Maté** (Paraguay tea) is largely grown in the basin of La Plata.

MINERALS. South America is very rich in minerals. The **silver** mines of Bolivia have yielded more of that metal than any other field in the world. **Gold** is widely distributed both in the Andes and in the eastern mountains. **Diamonds** are very important in Brazil. Until the discovery of the South African "pipes," this country was the chief source of the world's supply. The dry climate of northern Chile has made possible the accumulation of rich beds of **Chile nitre**, which is exported in large quantities for the making of fertilisers. It is the dry climate also that has preserved the valuable deposits of **guano** obtained from the islands of Chile and Peru.

ANIMALS. Sloths and ant-eaters are the most characteristic of the South American animals. But the modern specimens are far smaller than their gigantic ancestors which are now extinct. Opossums are found, and other small pouched animals that were formerly supposed to be confined to Australia. This seems to indicate the presence in former times of a land connection between America and Australia. The tapir, the puma, and the jaguar live in the forests, which are the home also of troops of monkeys and brilliant humming-birds. The condor of the Andes is the best-known bird of prey. The most useful native animals are the alpaca and the llama.

COLOMBIA, ECUADOR, PERU. The countries of Colombia, Ecuador, and Peru consist of three parts—a coastal strip, the mountainous region of the Andes, and a part of the interior lowlands. The climate depends upon the altitude. There are the hot zone, the

[1] Owing to wasteful cutting, cinchona trees are now rapidly diminishing. Chief supplies of quinine now come from plantations in Jamaica, India, and especially Java.

temperate zone, and the cool zone, just as in Mexico. But the great height of the Andes gives rise to another belt, namely, the cold zone, called locally the Paramos, which begins above the tree-line, at an altitude of about 10,000 feet. From **Colombia**, **gold**, **silver**, and **precious stones** are exported. **Sugar** and **cacao** are grown on the lowlands, and **coffee** on the hill-slopes. **Bananas** are extensively exported. The chief town is **Bogota**, on a small plain 9000 feet above sea-level. Its great altitude gives the town a delightful climate, but hinders its commerce. All goods are brought up on mule-back. **Ecuador** takes its name from the fact that the Equator passes almost through its capital. The chief products are **cacao** and **quinine**. The capital, **Quito**, is, like Bogota, situated high up in the Andes. The chief seaport is **Guayaquil**, which exports the cacao grown in the lowlands. The coastal strip of **Peru** is practically a rainless desert, except where irrigation can be practised, when rich crops of **sugar** and **cotton** are produced. The mountain belt is rich in minerals, while the eastern slopes of the mountains are clothed with dense tropical forests. The chief exports are **sugar** and **cotton** from the lowlands, **nitre** from the deserts, **copper** from the mountains, **wool** from the alpacas and vicunas reared on the high plains, and **rubber and cinchona** from the eastern forests. The capital, **Lima**, is an unhealthy town near the coast. Its port is **Callao**.

BOLIVIA. Bolivia possesses forested lowlands, and a broad, mountainous area in the west, but has no coastal strip. Large quantities of **silver** and **tin** are produced. The metal is carried on the backs of llamas to the coast. The eastern lowlands produce **cinchona**, **cacao**, and **rubber**. Bolivia is the original home of the potato, which was brought to Europe by the earliest English explorers. The capital is **La Paz**, on the Plateau of Titicaca, and 10,000 feet above sea-level.

CHILE. Chile extends along the Pacific coast for over 2500 miles. For most of its course the eastern frontier is formed by the summits of the Andes. The resources of the country are very great, and Chile is one of the most prosperous and progressive republics in South America. The desert region in the north produces **guano**

SOUTH AMERICA - OROGRAPHICAL

Bonne's Projection

English Miles

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and **nitrates**. Metals are found along the slopes of the Andes, the chief being **silver, tin,** and **copper**. The rich, central region, including the fertile valley of Chile, produces **barley, wine,** and **fruits**. The climate and productions are similar to those of California and Southern Europe. The capital is **Santiago**, and the chief port is **Valparaiso,** situated on a splendid bay surrounded by hills. Most of the imports come to Valparaiso; but the port of **Iquique**, in the north, has a larger export trade, due to its large shipments of guano and nitrates. A few hundred miles west of Valparaiso is the island of **Juan Fernandez**, where lived Alexander Selkirk, whose adventures gave rise to the story of *Robinson Crusoe*. A trans-continental railway from Valparaiso to Buenos Ayres was completed in the spring of 1910. The Andes are surmounted by a tunnel three miles long, and over 10,000 feet above sea-level.

ARGENTINA. The Argentine Republic is nine times the size of the United Kingdom. It includes part of the wooded region of El Gran Chaco, and almost the whole of the pampas. Patagonia, except along the base of the Andes, is mainly a stony desert. Argentina is one of the greatest **meat** and **grain** countries in the world. On the pampas immense herds of sheep and cattle are reared, and large quantities of **wool, hides**, and **meat** are exported. All the great frozen-meat and meat-extract companies of this country have farms and factories in the Argentine Republic. Every year larger crops of **wheat, maize**, and **oats** are grown, and it seems likely that in a few years Britain will import more grain from Argentina than from any other country. Wine and sugar are also produced.

Buenos Ayres, the capital, is a city of over one and a half million inhabitants. Ocean-going ships can reach **Rosario**, the second town in size. It is in the midst of a great grain-growing district, and exports large quantities of wheat, maize, and linseed. **Bahia Blanca,** sometimes called the Liverpool of the South, is fast becoming the gateway of a large grain and meat-exporting trade. The **Falkland Islands,** off the east coast of Argentina, belong to Britain. Sheep and cattle rearing are the chief occupations. Wool and frozen mutton are exported.

URUGUAY. Uruguay is a country half the size of Britain, lying to the east of La Plata estuary and the Uruguay River. Its productions are similar to those of Argentina, but **cattle-rearing** is relatively even more important. **Paysandu** and **Fray Bentos** are almost entirely engaged in the slaughtering of cattle, the curing and export of meat, the manufacture of meat-extract, and the export of hides, horns, and bones. The capital of Uruguay is **Montevideo**, a beautiful town situated on rather a poor harbour, which is, however, being improved and enlarged. The town is engaged in the meat trade.

PARAGUAY. Paraguay is an inland republic lying between the Parana and the Pilcomayo. Most of the inhabitants are native Indians. The chief productions are **maté**, or Paraguay tea (from which is made the favourite drink of South America), and **oranges.** There is also a considerable **meat** trade. The capital is **Asuncion**, on the Paraguay. Steamers ply between this town and Buenos Ayres.

BRAZIL. Brazil is the largest country in South America, and is more than three-fourths the size of all Europe. A large proportion of Brazil consists of highlands that can never be cultivated, or of the impenetrable forests of the Amazon basin. An area in the south, several times the size of Great Britain, seems best fitted for settlement.

The resources of Brazil are very great. **Gold** and **diamonds** have long been worked. From the forests, timber, dye-woods, and the finest **rubber** in the world are obtained. Along the coast, **sugar,** cacao, and tobacco are grown. Brazil produces more **coffee** than any other country in the world. Sao Paulo is the chief coffee-growing state. **Cotton** is largely exported. The capital, **Rio de Janeiro,** on one of the finest harbours in the world, has nearly a million inhabitants. **Pernambuco** and **Bahia** are the ports for the produce of the sugar and cotton plantations. **Belem** (or Para) exports the rubber, vanilla, and other forest products of the Amazon.

GUIANA. The country consists of three colonies, British Guiana, Dutch Guiana, and French Guiana. The low-lying coast-lands are

very fertile, but extremely unhealthy. The Guiana Highlands in the south have been only partially explored. There is a rich **gold**-field in British Guiana, but the chief wealth of the region consists in its **sugar** plantations. Cotton, cacao, and coffee are also grown. The capital of British Guiana is **Georgetown**, which exports sugar and rum. **Cayenne**, in French Guiana, is used chiefly as a convict settlement.

VENEZUELA. Venezuela consists chiefly of the basin of the Orinoco. The eastern extremity of the Andes crosses the country, and the most important towns are situated on the northern slopes of the mountains, and are connected with the coast by rail. **Coffee** is the chief product, but cacao, sugar, and tobacco are also largely grown. There are valuable **gold** and **copper** mines. Cattle-rearing is carried on in the llanos of the Orinoco. The capital is **Caracas**, in the midst of a rich coffee and cacao district. Its port is La Guayra.

AUSTRALASIA.

AUSTRALIA

POSITION AND EXTENT. Australia lies partly in the tropics and partly in the temperate zone. The island is almost 2500 miles from west to east, and nearly 2000 miles from north to south. The area is about three-fourths that of Europe.

RELIEF. There are three main divisions of Australia :—

1. **Eastern Highlands.** The Eastern Highlands, or **Great Dividing Range,** stretch continuously from Bass Strait to Cape York Peninsula. The mountains present a very steep slope to the east, but westwards they fall gradually to the interior lowlands. They do not consist of folded ranges, but have rather the structure of a **rugged and broken escarpment.** In Victoria and New South Wales the mountains are highest, and are known as the **Australian Alps** and the **Blue Mountains. Mount Kosciusko,** in the Australian Alps, is the highest summit in the continent, and is over 7000 feet above sea-level. The rivers that drain the eastern slopes of the Dividing Range are short and torrential, and have scored the mountains with deep gorges. They bring down such large quantities of sediment that harbours at their mouths are with difficulty kept navigable.

2. **Central Plains.** The Central Plains stretch right across the country from the Gulf of Carpentaria to the Southern Ocean. In the north the broad **Gulf of Carpentaria** is simply the submerged extremity of the Central Plains. They slope gradually from the Eastern Highlands, until at Lake Eyre they are 40 feet **below sea-level.** The surface is broken by the highlands of South Australia, the northern part of which is called the Flinders Range.

A large extent of the plains is watered by the Murray system,

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which includes the **Murray** itself, the **Darling**, the **Lachlan**, and the **Murrumbidgee**. These rivers water the most fertile parts of the Central Plains, and all are navigable for long distances by steamers of shallow draught. The rivers of the plains are swollen after rains, but in the dry season many of them consist merely of a succession of water-holes.

3. **Western Plateau.** West of the Central Plains the country rises gradually into the Western Plateau, a fairly even tableland which, over great areas, is a little more than 1000 feet above sea-level. The **Darling Range**, in West Australia, is simply the steep escarpment where the plateau falls suddenly to the sea. Much of this area has an inland drainage. Along the Great Australian Bight there is a stretch of coast-line extending for nearly a thousand miles, unbroken by a river flowing into the sea. Of the rivers of the west coast, the **Swan** is the most important.

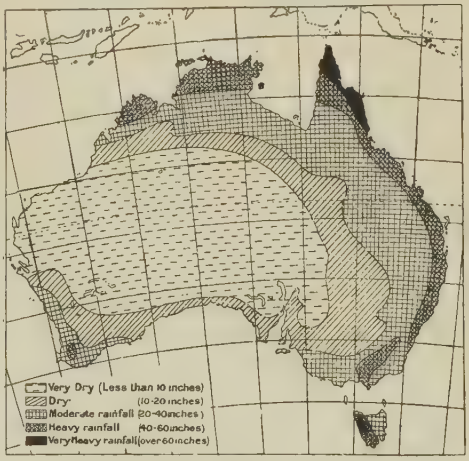
Very Dry (Less than 10 inches)
Dry (10-20 inches)
Moderate rainfall (20-40 inches)
Heavy rainfall (40-60 inches)
Very Heavy rainfall (over 60 inches)

FIG. 38.—Rainfall Map of Australia.

CLIMATE. Notice that much of Australia lies within the tropics, and that therefore, on the whole, the climate is hot. Even the most southerly point is in a latitude corresponding to that of southern Italy. Three main types of climate may be recognised.

1. The climate in the north is of the **monsoon** type. Rainfall is abundant, and occurs chiefly in summer.

2. Most of Australia is in the region of the **south-east trade-winds.** These winds bring plentiful rain to the east coast, but reach

the interior as dry winds. Part of the interior is therefore a desert. Even the winds that blow to the interior from the Great Australian Bight unfortunately do not bring rain, because they blow **from a cold sea to a warm land**, and therefore their capacity for holding moisture is increased. Study the rainfall map on p. 197. **Insufficient rainfall** is the great drawback of the interior of Australia. In recent years, however, parts of the country have been irrigated by sinking **artesian wells**, and thus utilising supplies of underground water. The waters of the Murrumbidgee are also stored by means of a huge dam, and used for irrigation purposes.

3. The south of the country has a climate similar to that of the **Mediterranean**, with hot, dry summers, and rain in winter.

PLANTS AND ANIMALS.—All the native plants have adapted themselves to a dry climate and a hot sun. The driest parts of the interior are absolute deserts, or are dotted over with the hateful **spinifex**, the spines of which tear the clothes and flesh of travellers, and wound their horses. Other parts are covered with **scrub**, dense bushes higher than a man, and very difficult to penetrate. Where the rainfall is sufficient, there are boundless plains of **grass**, offering splendid pasturage to immense herds of sheep and cattle. Where rain is plentiful, there are large forests of **eucalyptus** or **gum-trees**, which rival in height the mammoth trees of California. Perhaps the most characteristic of all the trees are the sweet-smelling **acacias**, with their yellow blossoms.

The most peculiar of the animals of Australia are the **marsupials**, that is, animals that carry their young in a pouch for some time after they are born. The **kangaroo** is the best-known example. Most remarkable of all is the duck-billed **platypus** (now almost extinct), which is a mammal, and yet lays eggs. Among the birds, cockatoos are common. The bower-bird, the ostrich-like emu, the lyre-bird, and the black swan are specially interesting. There are numerous snakes, some harmless and some poisonous.

PRODUCTIONS. Sheep-rearing is the most important industry in Australia, and **wool** is the most valuable export. There are large sheep-farms wherever the rainfall permits a sufficient growth

of grass, but the chief area is the basin of the Murray and its tributaries. Australia owns more sheep than any other country in the world, and the wool is of the finest quality, being long and silky. Great herds of **cattle** are also reared. New South Wales possesses most sheep and Queensland most cattle. Large quantities of **butter** are exported. **Wheat** is widely grown in Victoria, South Australia, and New South Wales, and large quantities are exported to Britain. The two former states are also the chief **wine** producers. **Sugar-cane** and other tropical products are cultivated in Queensland.

Australia is one of the chief **gold**-producing countries of the world. **Copper** is found mainly in Tasmania and Queensland. New South Wales has one of the richest **silver**-fields in the world, and possesses also valuable fields of **coal**. New South Wales and Queensland are famous for their **opals**.

VICTORIA. Victoria is the smallest but most densely populated state of Australia. The mountain-slopes are clothed with gigantic gum-trees, and the grass-lands support great flocks of sheep. **Wool** is the most important product. The **vine** and other Mediterranean fruits are largely grown, in many cases under irrigation. Wine from Victoria is now common in this country. Heavy crops of **wheat** are also grown. **Gold** is mined chiefly near **Ballarat** and **Bendigo**. The capital **Melbourne**, situated on the Yarra, is a town with nearly a million inhabitants, and contains many fine buildings, including a university. Farther down the bay is **Geelong**, which has **woollen** manufactures.

NEW SOUTH WALES. It was in this colony that the first settlement of Australia took place. New South Wales is the greatest sheep-rearing state in Australia, and **wool** is the most valuable product. The chief minerals are **coal** and **silver**. The silver district of **Broken Hill**, in the extreme west, is one of the richest in the world. **Newcastle**, at the mouth of the Hunter River, is the port of an immensely rich coal-field. The capital and the oldest city in Australia is **Sydney**, on Port Jackson, one of the most magnificent natural harbours in the world. The city contains many beautiful buildings, parks and gardens, and has a fine university. Including the surrounding suburbs, the city has over a million

inhabitants. At the extreme head of the harbour is **Paramatta**, the centre of a district producing fine fruit, particularly oranges. On the plateau west of Sydney is **Bathurst**, the centre of the chief wheat-growing part of the state. **Canberra** is the seat of the Commonwealth Government.

QUEENSLAND. Off the Queensland coast, and running parallel to the land for over 1000 miles, is the **Great Barrier Reef.** It is composed of coral rock, and forms a natural breakwater enclosing a belt of calm water. Gaps occur in the reef opposite the mouths of the large rivers, for the coral animal does not thrive in muddy water. In the hot and rainy northern region several tropical plants are cultivated, including cotton and coffee, but the **sugar-cane** is the most important. **Maize** and **wheat** are also grown. Great flocks of **sheep** and herds of **cattle** are kept on the uplands, particularly in the region in the south known as the Darling Downs. **Coal**, **copper**, **gold**, and **tin** are the chief minerals.

The capital, **Brisbane**, is the outlet of the fertile lands of the Darling Downs. **Rockhampton** exports the gold and copper of Mount Morgan, and wool from the surrounding pastoral districts.

SOUTH AUSTRALIA. South Australia, Central and North Australia, include the central belt that stretches right across the island from north to south. Part of the interior is desert. The extreme north is fertile, and similar in products to northern Queensland. Most of the inhabitants are in the south-east of South Australia, where **sheep-farming** is the principal occupation, but large quantities of **wheat** are grown. The production of copper, formerly so important, is dwindling. The capital is **Adelaide**, on the east side of St Vincent Gulf. Its seaport is Port Adelaide, some miles from the city. Adelaide is on the main railway route from Perth, Western Australia, to Brisbane, Queensland. Another railway serves the mining district of Broken Hill, in New South Wales.

WESTERN AUSTRALIA. This state includes most of the western plateau of Australia, much of which used to be considered desert, but has been found to be good stock-raising country. The west coast is the most fertile, and well suited for settlement. It

is famous for its valuable **timber**, which is exceptionally hard. **Pearl** fisheries are important along the coast. The most valuable product is **gold**, of which Western Australia now produces as much as all the other states together. The richest mines are at **Coolgardie** and **Kalgurlie**, to the east of Perth. These towns are supplied with water from hills near Perth, over 300 miles distant. The capital is **Perth**, on the Swan River. Its port is **Fremantle**, where mails are landed from the ocean liners.

TASMANIA. Tasmania forms a detached portion of the Eastern Highlands of Australia, separated from the mainland by the comparatively shallow **Bass Strait.** The island is a deeply **dissected plateau**, the highest parts of which reach a height of over 5000 feet. Tasmania lies in the zone of **westerly winds**, and has therefore an ample rainfall. The climate is not unlike that of southern England. **Fruit** has been found to thrive remarkably well, and large quantities of canned fruit and jam are exported. As in Australia, **sheep-rearing** is important. The most valuable mineral is **copper**, obtained from the Mount Lyell mines. **Tin** and **gold** are also found. The capital is **Hobart**, on a fine harbour at the mouth of the River Derwent. The town of **Launceston**, next in size, stands on the Tamar.

NEW ZEALAND.

New Zealand is not quite so large as the British Isles. It consists of two large islands, **North Island** and **South Island**, separated by **Cook Strait**; and a number of smaller islands, of which the chief is **Stewart Island**, separated from South Island by Foveaux Strait. New Zealand lies very nearly at the antipodes of Britain.

RELIEF. The long and narrow shape of New Zealand is determined by a series of **folded mountain-ranges** that run from south-west to north-east nearly the whole length of South Island, and are continued in North Island up to East Cape. In South Island these mountains are called the **Southern Alps.** Their loftiest peak, **Mt. Cook**, is over 12,000 feet high. The scenery of these mountains is magnificent, and great glaciers creep down to within a thousand feet of the level of the sea. The western slopes of the

FIG. 89.—New Zealand.

Southern Alps are steep and the coastal plains narrow, while the eastern slopes are much gentler, and broad plains are found, the most extensive being the **Canterbury Plains.** It follows that most of the people have settled on the eastern side of South Island, and there is no large town on the west coast.

In the North Island the north-west is flat, and rarely reaches 1000 feet above sea-level. The centre of the island is a plateau of **volcanic rocks,** above which rise active or extinct volcanoes. **Ruapehu** (9000 feet) is the highest of the active volcanoes, while the beautiful cone of **Mt. Egmont,** over 8000 feet high, is an extinct volcano. This is a region of geysers, hot lakes, and hot springs. The largest lake, **Lake Taupo,** occurs in a basin in the volcanic rocks. The lake is drained by the **Waikato,** the longest river in New Zealand. It is one of the few navigable rivers of the country. The rivers of the South Island are torrential in their upper courses, while the lower courses of those flowing east are through broad, flat plains, formed chiefly from the material brought down by the rivers.

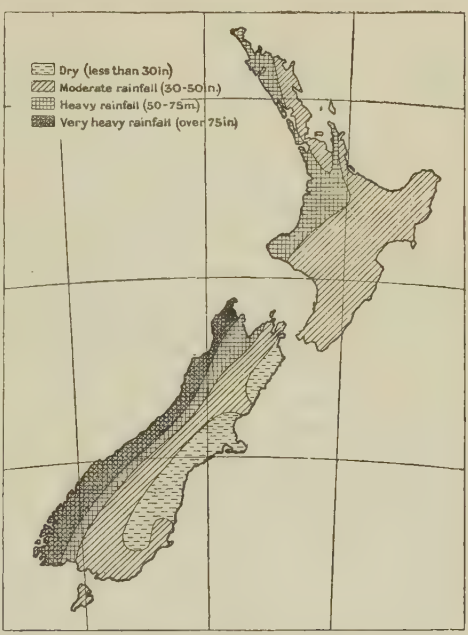

FIG. 40.—Rainfall Map of New Zealand.

CLIMATE. New Zealand has a typically **maritime** climate, the presence of the ocean preventing any great extremes of temperature.

In the North Island the climate is of the **Mediterranean** type, with winter rains, while in the South Island the climate is not unlike that of England, though warmer. As in England, rain falls at all seasons.

PLANTS AND ANIMALS. The hill-slopes are clothed with dense forests, the most valuable tree being the **kauri pine.** The resin of this tree is dug from the earth in a fossil condition, and is known as **kauri-gum.** The most peculiar of the plants of New Zealand are the great **tree-ferns.** The eastern plains as a rule form open grass-lands, suitable for sheep-rearing.

The birds are the most interesting of the animals. The **kiwi**, or **apteryx**, possesses neither wings nor tail.

PRODUCTIONS. All the European fruits and grains are grown, and **wheat** is specially important. A valuable product is the so-called **New Zealand flax**, which is more like hemp, for ropes are made from it. **Sheep-rearing** is by far the most important occupation, and **wool** and **frozen mutton** are the chief exports of the country. New Zealand is a great dairying country, and large quantities of **butter** are exported.

The chief minerals are **gold** and **coal.** Gold is found both in the North and in the South Island, one of the mines in the former island being the richest single mine in Australasia. Coal is so abundant that New Zealand may in time develop into a great manufacturing country.

TOWNS. The largest town in New Zealand is **Auckland**, at the head of Hauraki Gulf, on the east coast of North Island. It has a fine harbour, and is a calling-place for steamers from San Francisco to Sydney. **Wellington**, on Cook Strait, is the capital of the country. In South Island the chief towns are **Christchurch** and **Dunedin.** Christchurch is the chief town of the Canterbury Plains, and the products of that fertile region are exported from its seaport, Lyttelton. Dunedin, at the head of Otago Harbour, is a busy commercial town, and the port for a rich gold-producing region. The railway system of New Zealand consists chiefly of disconnected lines radiating inland from the four chief towns.

SHORT HISTORICAL NOTES ON NEW EUROPEAN STATES

It has been suggested as desirable that brief accounts might be given of the more important European States that have come into being since the termination of the Great War, or have regained their name and independence by the collapse of Russia and the downfall of Germany and Austria-Hungary. It is hoped that the following short Historical Notes will prove interesting and helpful.

THE BALTIC REPUBLICS.

ESTONIA (the Land of the Ests or Esths), in the early thirteenth century, was under the influence of Denmark, but about the middle of the fourteenth century the land was controlled by the Teutonic Knights, a body of German crusaders who, with other undertakings, engaged in converting to Christianity the natives or "heathen" of the south-eastern Baltic provinces. It was really a war of conquest. In 1561, however, Eric XIV. of Sweden desired to acquire Estonia, and the nobles and burghs agreed to accept the domination of Sweden. After the death of Charles XII. of Sweden, Peter the Great of Russia completely overcame the power of the Swedes and took possession of several provinces, including Estonia. The province remained under the rule of Russia until 1917 when the Russian Revolution took place. Estonia seized the opportunity and secured its independence. Soviet Russia and the Great Powers recognised Estonia as a free Republic. It is now a member of the League of Nations. The area is over 18,000 square miles, and the population is about 1,118,000.

LATVIA (the Land of the Letts) fought unsuccessfully against German aggression away back in the thirteenth century, and the state became part of the Federal Republic (Latvia, Estonia, etc.), which the Teutonic Knights created and held until 1561, when Latvia passed under the control of Lithuania-Poland. In 1772, after what is known as the First Partition of Poland, Latvia became part of Russia. In 1917, however, the strong desire of the Letts for independence was proclaimed in the Russian Constituent Assembly. In 1918, and later on in the same year, Latvia was proclaimed and recognised as a Free State. It was admitted to the League of

Nations in 1921. The area (including Courland, Lavonia, etc.), amounts to 24,440 square miles. In 1925 the population was estimated at 1,900,000.

LITHUANIA was a Grand Duchy in the early thirteenth century, and towards the end of the fourteenth century the Grand Duke Jogaila, having become a Christian, married the Queen of Poland, and thus became ruler of that country. Lithuania now grew to be a state of extended area and influence, but after the death of her greatest ruler in 1430, the Poles reasserted their power, and the two states existed side by side under one king and parliament. At the Partition of Poland, Greater Lithuania was assigned to Russia, and Minor Lithuania to Prussia. In 1917, Lithuania followed in the steps of Estonia and Latvia, and demanded complete independence. This was secured, and Lithuania is now a free Democratic Republic, and a member of the League of Nations. The area is 32,000 square miles, and the population nearly 5 million.

FINLAND.

FINLAND (the Land of the Finns), lying as it does between Sweden and Russia, suffered for many years from the ambitious greed of both these powers. As far back as the twelfth and thirteenth centuries, Sweden conquered the western and southern portions of the country, and about the middle of the seventeenth century the entire coast-line of the Finland Gulf passed into the possession of Sweden. The ambitious Peter the Great of Russia, however, in his war with Charles XII. of Sweden, secured a considerable portion of Finland, and this was greatly extended by his successor Elizabeth. In 1809 the entire land was conquered by Alexander I. of Russia, and Finland practically became a Russian Grand Duchy or principality, with the Russian Emperor as Grand Duke. The legal and military systems rapidly became Russian and by the end of the nineteenth century the Russian language became the official language of the country. All this gave rise to the most bitter disapproval of the Finns. After the collapse of Russia during the World War, the opportunity for securing independence arose when the Finnish House of Representatives proclaimed their freedom from foreign control. Finland became an independent and sovereign state and has been duly recognised as such by the Great Powers. It is a member of the League of Nations. It has an area of nearly 133,000 square miles, and a population of about 3½ million.

POLAND.

POLAND (the Land of the Poles) was an independent state for many centuries, and reached its highest point of importance about the middle of the sixteenth century when it became one of the most powerful states in Europe, with Warsaw as its capital. Its history, however, has been a chequered one owing to its conflicts with Turks, Austrians, Swedes, Prussians, and Russians. About the middle of the eighteenth century, Russian influence became much more aggressive and powerful, until in 1772 Russia with Austria and Prussia seized on portions of the Polish kingdom and added them to their own states. This is known as the First Partition of Poland. Twenty-one years later occurred the Second Partition when Russia and Prussia again extended their dominions at the cost of Poland.

The Poles, however, led by their hero Kosciuszko rose in rebellion. At first they were successful, but when Austria joined forces with the other two powers, the Poles were utterly crushed, and their land divided out among the victors. This is known as the Third and Final Partition of Poland.

Napoleon created in 1807 an independent Duchy with Warsaw as capital, but it only survived half a dozen years. Russia afterwards made an attempt to form some of the central provinces into a state under the Tsar. Then followed three serious but futile risings of the Poles, and finally Poland became practically extinct in all but name.

The undying desire of the people, however, for restoration of their independence was gratified to a limited extent in 1916, when the German and Austrian Emperors issued a proclamation stating that Poland was free. In 1918 there was a solemn declaration that Poland was an independent state, and the following year Poland's independence was recognised by the Treaty of Versailles. It is a member of the League of Nations. Its area is about 150,000 square miles, and its population nearly 30 million.

CZECHOSLOVAKIA.

CZECHOSLOVAKIA (the Land of the Czechs and Slovaks) came into existence as an individual state in October 1918. At that time the National Council resolved on a union of all the Czechoslovak countries, viz., Bohemia, Moravia, Silesia, Slovakia, and Ruthenia. The first four had until then belonged to the former Austro-Hungarian Monarchy, and the last named (Ruthenia) was part of sub-Carpathian Russia. A month later the National

Assembly, at a meeting in Prague, formally declared the new state a Republic, and it has now been recognised as a free and sovereign state by the Great Powers of Europe. It is a member of the League of Nations. Its area is 54,207 square miles, and its population over 13½ million.

ROMANIA.

ROMANIA is included here, not because it is a new state, but because, as a result of the Treaties following the Great War, Romania was more than doubled in area and population. The chief provinces added to the original state in 1918 were Transylvania, Bessarabia, and Bukovina.

The old state was formed by the union of Wallachia and Moldavia in 1861. Romania aided Russia in her war against Turkey in 1877, and the following year her independence from Turkish control was recognised by the Treaty of Berlin. In 1881 Romania became a hereditary kingdom. It took part in the Great War on the side of the Allies, and at the end of the conflict received the territories mentioned above. Romania is a member of the League of Nations. Its entire area now amounts to 122,300 square miles, and its population to nearly 17½ million.

YUGOSLAVIA.

YUGOSLAVIA (the State of the South Slavs) is the popular name for the new state formed by the union of the old Kingdoms of Serbia and Montenegro, with Bosnia and Hercegovina, Dalmatia, and Slovenia. The official name is the Kingdom of the Serbs, Croats, and Slovenes. It is the most powerful state in the Balkan Peninsula.

Serbia, the most important part of the new state, was for long in subjection to Turkey, but its independence was secured by the Treaty of Berlin in 1878. The other South Slav states that were under Turkish or Austrian domination asserted their freedom from foreign rule after the Post-War Revolution in Austria-Hungary. The union with Serbia was proclaimed in December 1918, and Montenegro, on the death of the King in 1921, became a definite part of Greater Serbia and thus joined the Union already formed. The Allied Governments duly recognised the independence of the new state. It is now a member of the League of Nations. Its area is over 96,000 square miles, and its population over 12 million.

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